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William Hunter's great honesty is shown by his not sparing to chronicle his mistakes. "When I can be of any service by telling a failure of my own," he said, "I shall relate it readily, though not with that pleasure as a case wherein I have been successful." With his example before us, can we say that scientific progress has succeeded in making woman's lot easier, healthier, and happier? Can we say that the march of civilisation is tending to help in any way to eliminate fear from women?

Modern science has advanced steadily in the past quarter of a century from every aspect; yet it is evident that there is still much to be done, and that much calls for prompt, efficient, and practical consideration, especially in this country.

PREGNANCY

Without doubt the more primitive type of woman among us feels at her best when carrying a baby; but civilisation and enforced city life increase the incidence of the minor ailments of pregnancy, which are also commoner among women who resent their pregnancy.

Pregnancy must not be looked upon as an illness; hence everything should be done, from the earliest weeks onwards, to dispel all fear and apprehension. The problem of diet in pregnancy is also most pressing. Last century the advocates of preventive medicine fought the battle for proper sanitation; so this century they will fight the battle for proper nutrition. Just as today sound drains and clean water are the sine-qua-non of civilised life, so will a proper diet come to be regarded as the necessity of all classes of the community.

As regards maternal mortality and morbidity much has been done by antenatal care, improved obstetrics, and the latest methods of treatment of puerperal fever, but very little advance has yet been made in the care of pregnant women throughout the land. A higher standard of physical motherhood is urgently needed. In Soviet Russia there are heavy fines for refusing to employ pregnant women or for reducing their wages for reasons of motherhood, and two months' leave is granted besides the regular normal holiday at full wages. In this country a recent Ministry of Labour report says that 900,000 married women go out to work, but of these 300,000 pass themselves off as single girls. Often, if they told the truth, they would lose their jobs. This surely is a wrong that should be righted, quite apart from its influence in encouraging infertility.

Is not the pregnant woman the first and most important citizen in the land? Should not her diet, her well-being, her general health, her home-life and environment, her freedom from unnecessary anxiety, and her serenity of mind be the foremost concern of us all and of the state in particular?

ABORTION

William Hunter wrote: "Knowledge of women has enabled me to say, though no doubt there will be many exceptions to the general rule, that women who are pregnant, without daring to avow their situation, are commonly objects of the greatest compassion, and generally less criminal than the world imagines." In Germany today every effort is being made to reduce the practice of artificially induced abortion and to aid the illegitimate child and its mother, who is given every assistance throughout the pregnancy and confinement and helped to obtain such employment afterwards as will enable her to keep the child under her own care. Since illegitimate births are computed as between a tenth and a sixth of the total in that country, the woman who carries her illegitimate baby to term is treated with the greatest respect and consideration.

Many changes have recently taken place in thought and practice in connexion with operations for abortion. In Soviet Russia the swing-over has been remarkable. Previously the maternal morbidity and mortality from unskilled abortion were so high that in 1920 the operation of evacuation of the pregnant uterus was authorised by the government. The 1920 decree regarding abortion thus laid down:—

(1) That the operation should be performed free of charge at a Soviet hospital;

(2) That no abortion was to be performed except by a qualified doctor;

(3) That a midwife performing the operation should be liable to heavy penalties;

(4) That a doctor performing the operation for money should be liable to heavy penalties.

In one year 250,000 abortions were performed by medical practitioners in public hospitals, with the result that maternal morbidity and mortality quickly diminished; but now, with the changed attitude due to the launching of an intensive population programme, instrumental abortion has been made punishable. However, in the new law, there is no mention of contraception. Can Russia, therefore, eliminate abortion without providing adequate contraceptive facilities for its population?

In this country the Abortion Law Reform Association is doing its utmost to help in the elucidation of this very difficult problem and will be aided by the conclusions of the Birkett Commission, which have not yet been published.

LABOUR

William Hunter evidently disapproved of "meddlesome midwifery":—

"In few cases, I think the forceps an useful instrument; to a poor woman that is quite exhausted they may be a considerable service, but I wish to God they had never been contrived. I am convinced that the forceps has killed three, I may say, out of ten women that it has saved, and therefore we should never use it on any occasion but where it is absolutely necessary."

These words, it would seem, referred to the high-forceps operation when the fœtal head is floating with no attempt at engagement, a proceeding that has been completely replaced by the modern lower-

* Abridged from the Hunterian oration of the Hunterian Society delivered on Feb. 27, 1939.

segment cæsarean section, from which such excellent results for both mother and baby are being obtained.

Nowadays, were the press to avoid publishing statistics of puerperal morbidity and mortality and emphasising the abnormal at the expense of the normal, much could be done to alleviate the fear of childbirth. Prof. Miles Phillips says:—

"Institutional midwifery is on the upward grade. It is because of the increasing number of women who desire the relief from pain in childbirth, as well as the much to be desired lessening of the traumata of delivery."

Domiciliary midwifery cannot achieve these two, but can be aided by the obstetric flying squad which has come so much to the fore recently that most cities and big towns will soon have their own expert emergency service. Shock and antepartum and postpartum hæmorrhage are typical examples of the most urgent calls for this squad, which usually arranges for the nurse to take the outfit and meet the consultant at the house. Thus, in domiciliary practice, many hæmorrhage and "shock" cases can be successfully handled when such an expert emergency team is made available, whereas the act of moving these patients to hospital often meets with disastrous results.

Further, the Central Midwives Board are doing all that is humanly possible to improve the standard of midwifery service throughout the country.

At the same time the women of England undoubtedly owe a great deal to those workers who have been striving to bring to perfection a safe method of analgesia in midwifery. Minnitt, Chassar Moir, Elam, and others have done much to advance the gas-and-air method with their various types of portable apparatus. All are agreed, however, that for complete safety and so for universal application the machine must only be used by someone experienced in the method. This complicates the problem in rural districts where there is only one midwife, but in time that difficulty will, and must, be met.

The gas-and-air apparatus in some modification has come to stay, and in time should be available to every mother in Great Britain, whether in town or country, who may have need of it.

BREAST-FEEDING

The modern decline of breast-feeding has been receiving great publicity recently in the medical press, especially since Dr. J. C. Spence at last year's annual meeting of the British Medical Association provoked considerable thought and comment.

In many rural districts 95 per cent. of women manage to feed their babies successfully. But many factors—dietetic, endocrine, physiological and environmental—are at work in the establishment of lactation and some are very difficult to deal with.

Over-assiduity in the treatment of the nipples is not to be encouraged, certainly in some of the rather over-sensitive types, simple care in the last six weeks being found sufficient. How often one finds that the mother who has herself failed to nurse her babies is entirely and deliberately responsible for her daughter's subsequent and similar failure when the time comes. How often, also, the maternity nurse or her successor lets the mother slip into complementary, then supplementary, feeding with the usual result. Dr. Spence blames the mechanisation of breast-feeding in nursing-homes and maternity hospitals, claiming that the atmosphere of big hospital wards and crowded welfare centres does not encourage breast-feeding.

There is undoubtedly a very small proportion of women (perhaps 5 per cent.) in whom it is impossible to establish lactation; but there is a large group that could be more encouraged by the doctor, maternity nurse, mother, and husband, as well as by the clinic or welfare centre. In India the Hindu mothers are forbidden to eat meat, fish, or eggs; they are too poor to buy milk, and they have little fruit. Yet the babies gain steadily in weight for the first seven or eight months. Failure, therefore, cannot be altogether the fault of the mother's diet and its possible deficiencies.

When artificial feeding is necessary it is well to remember that the preservation of breast-milk, having been tried out elsewhere, is gradually coming into this country. It was found in 1933 that breast-milk heated to 175° F. on three successive days remained sterile indefinitely when properly refrigerated. This method only needs sound organisation and encouragement, after which considerable benefit should accrue in the feeding, especially of feeble infants. Already the Queen Charlotte's Hospital bureau of human milk is a going concern.

PUERPERAL SEPSIS

The medical profession of this country may well be proud of the brilliant research work that has emanated from Queen Charlotte's Hospital isolation block where, under the ægis of Dr. Leonard Colebrook and his colleagues, results have been and are still being produced that have been quoted all over the civilised globe.

In the last seven years' experience at the hospital the incidence of streptococcal infections has been 1 in 700 cases in hospital and 1 in 115 cases on "district"—i.e., six times more frequent than in hospital. These last very important figures point to the need for the increase of institutional treatment when possible. The Queen Charlotte's Hospital isolation block conclusions on chemotherapy make most encouraging reading. In hæmolytic streptococcus cases in the pre-sulphanilamide days 500 cases showed a mortality of 22·6 per cent. Since sulphanilamide was introduced, in two years there were over 300 cases with a mortality of 5·3 per cent., and in 1938 there were over 100 cases with 4 deaths—i.e., under 4 per cent., as against 22·6 per cent. previously. It is especially noteworthy that certain types of infection which the patients never previously were known to survive—e.g., generalised peritonitis with streptococcæmia—are now being cured.

POSTNATAL EXAMINATION

So much of the gynæcologist's time is spent in repairing the various traumata of labour, that the great importance of the postnatal examination has at last come to be fully realised. We need not quite aspire to the thoroughness of certain clinics that, about three or four weeks after delivery, wish to put almost every woman under an anæsthetic and there and then repair every slight tear of the cervix. Such measures in the end only increase the fear of childbirth and the dread of cancer and tend to lead procreation further from its natural course.

At this postnatal examination, usually six to eight weeks after delivery, a speculum should be passed and the cervix thoroughly investigated, since this is the stage at which local treatment may be needed. If there is superficial cervicitis, local electrical superficial coagulation could be performed in out-patients. If an endocervicitis with erosion is seen, dilatation should be done with thorough excision of the superficial tissues by the diathermy cutting loop. Prompt treatment at this stage prevents other troubles later on.

It is at this examination that sacro-iliac strain may show itself and call for careful manipulation of the lumbar spine and sacro-iliac joints. If this condition appears at all during the pregnancy, as it often does, it should be tackled at once and not just made light of as one of the discomforts that must be endured, for very often a thoroughly dependable osteopath gets good and quick results by his manipulation without anæsthesia in such cases.

EXAMINATION AT VARIOUS EPOCHS

In the hope of avoiding disturbances at the various epochs in a woman's life, it would seem wise to consult the family practitioner at certain times:

(1) In the adolescent stage, if the periods are not setting in properly, for by this means a good many cases of uterine hypoplasia may be tackled in time, with the avoidance of subsequent amenorrhœa, hypomenorrhœa, and sterility.

(2) At the premarital examination, which will be mentioned subsequently, for at this and the visit in early married life birth control or spacing of the children can be discussed.

(3) During the first three months of the first pregnancy.

(4) In the early forties before the menopause, when a thorough and general examination should be carried out.

These examinations are meant to prevent disturbances at special times and to allay natural anxieties. The frequent occurrence of the hypoplastic uterus, met with in the investigation of sterility in early married life, is causing observers to take more notice than heretofore of menstrual errors and endocrine dysfunction in the adolescent years. Obesity at puberty, whether nutritive or endocrinal, should be dealt with in the same way as disorders of menstruation and not just passed by with the advice that the girl will grow out of it eventually.

A premarital medical examination is now compulsory in Turkey, having been adopted in 1925. With them the law of public hygiene and the penal code prescribe penalties for all infraction of the rules concerning prenuptial examinations and the treatment of venereal disease. "No marriage is permitted to those infected with syphilis, gonorrhœa, soft chancre, leprosy, or mental disease, unless they present a medical certificate stating that all danger of infection is over, and that the diseased person has made a complete recovery after a proper course of treatment."

Most European countries are now making efforts to introduce the premarital certificate of health. Unfortunately it seems that only the more responsible and intelligent members of the community will conform to this, while the presumptive carriers of hereditary defects will be the least likely to fall in line. The German government decreed that, after July, 1938, physicians' certificates of physical and mental fitness for procreation must be produced. However, in the democratic countries it seems that a compulsory certificate at marriage is not considered a sound eugenic step. It is wiser to encourage gradually the development of a eugenic conscience in this matter and, if possible, the voluntary filling in by each of the partners of something on the lines of the confidential schedule of the British Eugenics Society.

As regards venereal disease at least the day is fast approaching when those about to marry should have a thorough medical examination. In this country this would be only one of the many channels along which the newly established Marriage Guidance Council is hoping to help those seeking its advice. In 1936 it was estimated that of the 125 million people in the U.S.A. 12 million were suffering from syphilis, with an annual increase of over a million cases a year. Now in nine states of the U.S.A. both male and female applicants for marriage must produce medical certificates showing that both are free from syphilis, or, in some states, from all venereal disease.

Turning to a later phase of life, it is coming to be understood how important is the examination from the gynæcological standpoint of women, both single and married, at about the age of 40. Much good advice and much reassurance can be given, minor adjustments done, and major surgery avoided. It has been stated by one who ought to know better, that parous women should, before they reach the menopause, undergo a vaginal hysterectomy to avoid carcinoma. This surely is a most reprehensible statement and seems to be on a level with another that has just now a very free transatlantic circulation among the most easily impressionable class, that every woman should have her cervix uteri cauterised after each confinement and that this procedure should frequently be accompanied by a curettage, again with the same preventive object in view. I should like to ask my gynæcological colleagues how often they see a case of carcinoma of the cervix outside their hospital outpatients.

The B.M.A. discussion last year on radiotherapy in non-malignant uterine hæmorrhage should have gone far to allay the fears of many middle-aged women who have need of active treatment for uterine hæmorrhage. B. W. Windeyer, in pleading the cause of radiotherapy, whether by X rays or radium, quoted Leonard Phillips's collection, from twenty authors, of 7000 cases that were irradiated, showing a 95 per cent. rate of cure and a mortality of 0·25 per cent. The question of which is the preferable method—X rays or radium—must be carefully weighed, for in all series of cases will be some in which operation is contra-indicated, others in which operation is advisable, and others in which the decision is hovering in the balance and for which sound judgment will be needed.

THE MENOPAUSE

It is considered that 85 per cent. of women pass through the change of life without interrupting their daily routine. Truly a study of the menopause reaches all the fields of medicine; hence, once the gynæcologist has made his physical examination and excluded any gross pathological lesion, the treatment should devolve on the general physician, who may be fortunate enough to be in charge of his own endocrine clinic at the hospital. For here œstrin therapy holds out very real help to the menopausal woman who presents any untoward symptoms, for it should be possible to assure her that she is entering the period of life's greatest contentment. Sarah Trent says: "Let women understand this neat division in their lives, the years up to 40 for growing, for learning, for marrying and bearing children; the latter years for self-expression for herself and for all kinds of social and helpful activities."

It is only recently that œstrin therapy has come into the limelight so much. Previously suggestions would be the giving of bromide, with perhaps some thyroid medication in suitable cases, in others advice about diet, the management of life generally, and the treatment of obesity by suitable diet and exercise. These still figure in the programme, but a suitable dosage of œstrin may be established for three, six, or twelve months, in severe cases taking great care not to reduce this dosage before the patient has been

symptom-free, at least two or three months, and then to reduce it only by one-third.

HORMONES

Those specially interested in the prevention of neoplastic formation cannot fail to be apprehensive of the newly spreading and rapidly advancing hormonal suppression of lactation. It has been shown that the incidence of carcinoma mammæ is greater among married women when lactation has failed. Up till recently, if a baby was stillborn, or if a mother failed to nurse her child, the intake of fluid was much reduced, the breasts were very tightly bound up for 14–21 days, and the patient was given copious draughts of saline purges by her maternity nurse—in other words the procedure was not very agreeable, and the unpleasant symptoms at times weighed the balance in favour of continuing with breast-feeding. Not so nowadays—a few injections or a few tablets by the mouth meet with conspicuous and often immediate success in the entire suppression of lactation. But what may this easy way out bring in its train, perhaps in generations to come?

Geoffrey Keynes considers that hormonal control of the breast function is less likely to cause carcinoma, for it presumably stops the flow of milk and thereby avoids the congestion of the breast which follows when the baby is merely taken from it. The carcinoma induced in mice by œstrogen needs a very considerable amount to be given over a very long period, and the female is far less susceptible than the male. R. D. Passey feels that, in view of the laboratory experiments, it is not wise to be too dogmatic at this stage. E. C. Dodds says that, although the injection of massive doses of œstrone into animals over a prolonged period practically from birth increases the incidence of mammary carcinoma in a strain susceptible to this, it does not do so in animals that are not susceptible. When painted for long periods on the skin of mice, œstrogenic hormones do not produce carcinoma and they are therefore not carcinogenic in the sense in which this term is employed by pathologists. According to Dodds the production of mammary carcinoma by œstrogens is probably due to excessive stimulation of the gland by very large doses, and he points out that the physician does not employ doses in any way approaching those required to produce carcinoma of the breast in experimental animals.

Gardiner-Hill advises caution and circumspection in the use of hormones, but says: "Provided that their administration is under careful supervision and dosage controlled, there seems no reason to fear for the future of rational hormonal substitution therapy. . . . It would seem that the safety factor, as far as the use of œstrogens in the human female in ordinary clinical doses is concerned, is well within reasonable limits."

It is at this point important to record that present-day views on the so-called precancerous conditions of the cervix uteri are tending to swing away from implicating chronic cervicitis and chronic erosion, and that much more attention is being directed to the hormonal imbalance and the effects of any dysfunction on local areas, such as the cervix, the corpus uteri, and the mamma. It is interesting to read the present views of Aleck Bourne and L. T. Bond, who are coming to the opinion that the part played by infection, especially of the endocervix, in the ætiology of cervical erosion and so-called chronic cervicitis has been greatly over-estimated, and that some other factor must be of major importance. It seems certain that the glands of the cervix, in common with the endometrium, are influenced by ovarian and other hormones and that these must control their activity to a considerable extent, with the result that excessive secretion, and probably hyperplasia of these glands, may occur in the complete absence of infection. This is very important work, for undoubtedly the cervix uteri and its pathology are of prime importance.

STERILITY

On the subject of sterility Hunter wrote:

"Barrenness proceeds from many causes and is quite inexplicable. . . . We now come to the choice of a wife either for yourself or friend. In choosing a wife consider her parents and family; prolific parents have generally prolific children. Next her good general health—Let her not be subject to have too great or too little an efflux, nor let them be irregular or at times mixed with the whites. . . . A sedentary quiet and regular way of life I believe has a great effect on conception, and that this is the reason why the superior Clergy are blest with such fine troops of children—the dissolute common girls who frequent Covent Garden seldom or never conceive—altho' they have the advantage of all the fine young fellows about Town."

The treatment of sterility has made great strides in the last few years; clinics are being formed in the big cities in the more progressive countries, where the matter is thoroughly investigated from the male and female standpoint, under one roof. The most recent work on the impairment of fertility opens with the sentence "It is no longer necessary to persuade intelligent laymen that the assessment of the fertility of the husband is as important as that of the wife. In increasing numbers they themselves are realising this fact and are not only willing but expect to submit to examination." In fact the four of us who recently have combined in this investigation have all been very surprised and not a little disturbed at the percentage figures of subfertility encountered in the various series of husbands who have been inspected.

Probably the woman of this epoch is faced by a more difficult lot than was any of her forebears; for, though in this country the 15 million women voters outnumber the 13 million men voters, it is still a hard fact that many are unable to marry until after the optimal age of twenty to twenty-five, and that many still do not marry at all and so fail to fulfil their most natural function. Some of those who speak against birth control try to claim that the practice of contraception tends to produce sterility. However, so long as intracervical studs or stems or intra-uterine rings are not used, this does not seem to be the case. One clinic collected recently a series of 97 women who stopped using contraceptives because they desired another pregnancy, and of these 96 were successful.

It must be remembered that pregnancy depends on the coincidence of intercourse with the fertile phase of the cycle. Raymond Pearl concluded that, in a group of healthy white women between the ages of twenty and twenty-four, 30 pregnancies occurred in every 200 ovulations—i.e., the fertilisation-rate at any given ovulation is 1 in 7. The practitioner is constantly being asked how long should elapse before a married couple should ask for an investigation of so-called sterility. It may be said that, if one of a possible thirteen ova is not fertilised in any one year, there is probably a lowered fertility in one or both partners.

ARTIFICIAL INSEMINATION

In 1799 John Hunter first used artificial insemination in the treatment of human sterility, in a case of hypospadias in the husband, but for more than a hundred years after this the subject received but little attention. Prof. W. C. Miller has stated that in veterinary eugenics hormonic control has reached such a pitch that artificial œstrus may be induced in females at any selected date, with the subsequent development of mature and ripe follicles and of ovulation. All this, accompanied by the preservation of spermatozoa in an active state for a considerable period, will enable man to claim that he has achieved almost complete control of the mechanical features of reproduction. Russia has been far more interested in artificial insemination in animals than has any other country. Indeed the technique and equipment there are so rapidly improving that in a few years their methods are likely to be more and more widely utilised. At present this practice in Russia far exceeds anything done in all the European and American countries combined.

In man eutelegenesis is the idea of applying artificial insemination to the purpose of positive eugenics. Since about 10–15 per cent. of all marriages in civilised countries are sterile, this method may, before long, be applicable in certain cases of male sterility, to reduce the number of refractory sterilities, especially where procreation means a great deal to the woman concerned.

The proportion of subfertile adults in our population is not known; hence in investigating and assessing a case of a sterile mating a definite routine examination is made of both parties at the same time. There have been many classifications of so-called sterility, but probably the following is the best and simplest: (1) primary low fertility; (2) secondary lowered fertility; and (3) dyskyesis, or incapacity to carry pregnancy to term—in connexion with which an entirely new specific type of sterility is coming to be recognised in which lowered fertility in the male is manifested by spontaneous miscarriage in the female. John Rock's experiments on the differences of electrical potential strongly indicate that associated with human ovulation there is a characteristic change in the electrical condition in the pelvis, which has not been observed at other times in these cases or at any time in subjects who have no ripe follicle. If this investigation leads to the determination of the exact time of ovulation, it will be a step forward of the utmost importance as regards both contraception and sterility.

DIMINISHING FERTILITY

The declining fertility figures cause the gravest concern to all those scientists who are specially interested in the subject, and we feel that it is of the utmost importance for all in this country and the colonies to become eugenically minded. Eugenists themselves claim that the general fertility-rate is a better measure than the crude birth-rate. Indeed mathematicians have been enlisted in the cause, bringing forward arguments to prove almost that within a reasonable time the human race will be extinct.

In their concentration on this lamentable result of their investigation they do not seem to be aware that at a not very remote period mankind was content with an almost stationary population incomparably smaller than at present, that the later increased rate of human production was abnormal, that the disorder it introduced was further increased by the still continuing conquests of medicine and hygiene in diminishing the death-rate, that it became necessary to substitute humane and artificial methods for the natural but cruel methods of restricting the growth of population, and that, in any case, the fall or rise of the birth-rate today tells us nothing whatever about the birth-rate of tomorrow, even though we know that among the higher biological species and at the higher human cultural levels the birth-rate is always low.

The population of the world at the middle of the seventeenth century was about 500 million persons. It is now, in three centuries, over 2000 million—more than a fourfold increase—with the most rapid advance during the last hundred years. The terrors of over-population are now however giving place to those of under-population. Sir Farquhar Buzzard has forecast the state control of all marriages within the next 25 years as a necessary measure to preserve the quality of the race, since we are confronted not only with a declining birth-rate but also with the prospect of a population in which the unfit would outnumber the fit.

Most energy has recently been expended to try to check the declining birth-rate in France, Belgium, Italy, and Germany. A population policy was begun in Italy in 1926, in Belgium in 1930, and in Germany in 1933. In 1932 in France the payment of family allowances—1–2 per cent. of the total wages bill—was made compulsory in many industries. The same was done in Belgium in 1928; but in neither country has the birth-rate ceased to decline steadily. In Italy Mussolini wanted a population of 60 million in 1950 from the present 44 million. To this end he gave preference to married men in public service, gave special prizes to mothers of twins or triplets, allowed fathers of eight children to have their children educated free, and taxed bachelors very highly. Here are also laws against birth control, and there are marriage and birth premiums.

Germany is the only country whose birth-rate has risen sharply, from 14·7 per 1000 in 1933 to 18·8 per 1000 in 1937. The principal measures to check the decline in birth-rate have been marriage loans, begun in 1933, which are given in the form of tokens that may be exchanged for household requisites; lump-sum grants from state funds; and family allowances to check the "flight from the land," the marriage loans being given on specially favourable terms to persons engaged in agriculture or forestry. In France, Belgium, and Switzerland there are no birth-control clinics. France and Belgium are trying to raise their birth-rates by a nation-wide family allowance system, so far without success. It is estimated that, if a similar system were instituted in this country, it would cost around £5,000,000 per annum.

The British race all over the world is lowering its birth-rate. There are no slums in Australia or New Zealand, but there has been a considerable fall in the birth-rate, as well as in Canada and South Africa. The fertility of the British stock in the Dominions has fallen as rapidly as in the mother country.

The Nazi leaders originally formulated a theory concerning woman's place in their state. They sought to further the reproductive function, to subordinate the work function to an ideal of womanliness, and to provide happiness and security in the home. Their inclination is to fit all women into a single mould on the assumption of a universal maternal feeling and unlimited wifely docility. But, with silence about birth-control information, the fact

that excessive reproduction means quantity not quality, the still deficient reproduction-rate for the maintenance of population, the unfair distribution of the burden of work and of reproduction, and the failure to recognise individual differences between women, all does not move forwards quite as smoothly as was anticipated. In June, 1936, with the German drive for more births, the insurance offices decided that sterility in women was to be regarded as a disease. So now what amounts to a census of German breeding stock is taking place at approved eugenic clinics. An enormous number of family charts are prepared which include the results of individual examinations made at the clinics. One card is retained by the health office, another goes to the health office at the individual's birth-place, and the third to a huge central archive at the national health office.

Undoubtedly there are lessons that may be learnt from the eugenic measures in Germany of the Third Reich. They were recently described by Dr. Felix Tietze in a paper to the British Eugenics Society.

STERILISATION

At this point it may be of interest to mention that one of the latest European sterilisation laws is being tried out in Latvia, where a commission is given complete freedom to decide on the suitability of sterilisation, with no specific regulations. In Sweden a sterilisation bill came into force in January, 1935, governing only the sterilisation of persons suffering from insanity, feeble-mindedness, or other mental disorders, who by reason of such condition are permanently inhibited from giving a valid consent to this procedure. Voluntary sterilisation is outside the scope of this law and is allowed on adequate grounds and is done without legal procedure. The surgeon who performs the operation has to report to the ministry of health, and the grounds for sterilisation may be eugenic, medical, or social.

In England the Voluntary Sterilisation Bill which is now before this country permits of the sterilisation of four classes: (1) mental defectives; (2) those who have suffered mental disorder in the past; (3) those who have grave physical disability which is likely to be inherited; and (4) those who are deemed likely to transmit a mental defect or grave physical disability to subsequent generations. Lord Dawson, who has done so much for this measure, has truly said: "The smaller the birth-rate the more it is necessary to organise selection for quality, if the race is not to deteriorate."

THE PECKHAM HEALTH CENTRE

This centre is already striving along the right lines. When the family joins up, every member is examined both clinically and by routine laboratory tests, and this examination is supplemented by periodic health overhauls and by such special services as premarital consultations and examinations with the giving of advice during pregnancy and the postnatal period. The centre considered that a self-supporting organisation would require the enrolment of about 2000 families. At this centre the family overhaul begins with the father or with any newborn child, after which other members of the family follow. The examinations—three for each person—are an examination in the laboratory along a prescribed schedule, the physical examination by the doctor in the consulting-room, and the "family consultation" between the assembled family and the doctors who have examined any of them.

The result of this method of approach is found to be amazingly informative and invaluable to the biologist, covering as it may the whole of family life. Possibly most striking are the benefits from the regime of the "parental consultation," which takes place between both parents and doctor before, during, and after pregnancy and again at the approach of weaning, together with the care of the mother all through the pregnancy, with fortnightly visits to the laboratory and a monthly visit to the doctor-biologist, and a return visit after the confinement, when breast-feeding has been weel established.

At the centre they consider that already the difference is apparent in those infants born of parents prepared for their pregnancy. It seems that whereas all babies tend to show high biochemical values of iron, calcium, &c., at birth, it is common to find a fall of these within the first six months of life. In the centre they find that such a fall only occurs where the mother's value was low and was not substituted during pregnancy. If this is true they have evidently found a technique for helping to eliminate maternal morbidity, and possibly of modifying, if not breaking, the vicious circle of inheritance of constitution, and so perhaps indirectly of raising the birth-rate.

The centre gives each family the chance of eliminating disorders as they arise, so that they shall not slowly undermine the constitution of each person and prematurely use up his vital reserves. This is rational scientific medicine in the opinion of those responsible for this most excellent, far-seeing, and unique experiment.

CONCLUSION

I have reviewed various aspects of gynæcology and obstetrics in which advancing knowledge has held out a helping hand to women; I have explored various avenues offering hope in future research; and I have commented on various menaces that threaten us and call for careful scientific scrutiny.

The grim figures of unemployment, the insufficient housing accommodation, the shackles of the deferred-payment system, the effects of taxation, the rising cost of education, though everpresent in their unforgettable reality, seem all comparatively minor in their importance; for the last few months have brought new and far more disturbing deterrents to fertility in their train, in the greatest menace of all, fear. The biologist, the eugenist, and the sociologist try to gaze far into the future, but the immediate present is a great deal more urgent, and surely is the only time for action, if action there can be. If this society is in any way a mouthpiece of the medical profession of this country, I do most earnestly emphasise that now is the moment for the doctors, lawyers, and scientists of the world, who in very truth are members of one brotherhood with one common object, to do their utmost to represent to their politicians, their leaders, and the heads of their governments, the abiding truth of the illegality of aerial bombardment of the civilian population of cities.

THE sixth congress of the International Hospital Association will be held in Toronto from Sept. 19 to 23 under the presidency of Dr. Malcolm MacEachern, associate director of the American College of Surgeons, Chicago. The mornings will be devoted to plenary sessions at which the principal subjects for discussion will be world-wide advances in hospital construction; the place of the hospital in the community; and hospital organisation and management. At other meetings the reports of the study committees will be presented and discussed. The headquarters of the congress will be at the Royal York Hotel, Toronto.

A NEUROTROPIC STRAIN OF HUMAN INFLUENZA VIRUS

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During the five years which have elapsed since the first isolation of human influenza virus most of the evidence about the behaviour of the virus has emphasised its predilection for the respiratory tract. Most workers agree that ferrets and mice infected intranasally with influenza virus develop lesions only in the nose and lungs. The evidence about the recovery of the virus from the tissues of inoculated animals is at present somewhat conflicting. Thus, the work of Smith, Andrewes and Laidlaw with the W.S. strain of virus soon after its initial isolation resulted in failure to recover virus from any organ other than the nasal turbinates and lungs of infected ferrets and mice (Smith 1936). However, Smorodintseff and Ostrovskaya (1937) claimed that they could recover virus from the blood, liver, spleen and urine of mice infected with virus intranasally, and Cerruti (1937) recovered virus from the liver, spleen, and brain of mice after intranasal infection. Although Cerruti worked with a strain of W.S. virus which had been passaged many times in ferrets and in mice and had undergone a considerable increase in virulence for mice (Andrewes and Smith 1937), Smorodintseff obtained his results both with the virulent W.S. virus and with the Leningrad strain, which had been isolated only a short time previously.

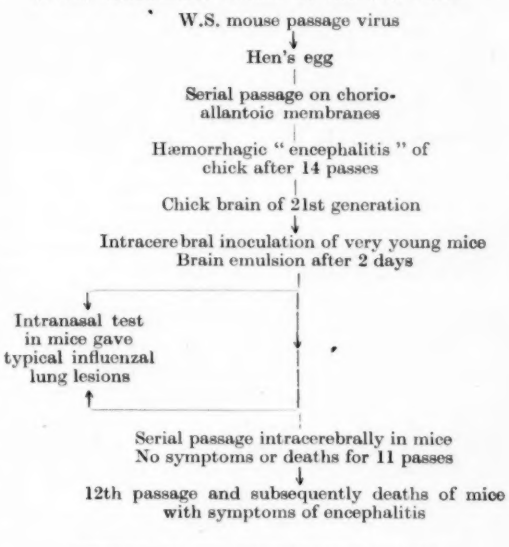
More recent attempts in the laboratory of the National Institute for Medical Research to isolate virus from the organs of mice infected intranasally with the virulent W.S. virus have resulted in the recovery of virus from the spleens of moribund mice but not from the heart's blood, liver or urine. The brains were not tested in these experiments, and the results with the spleens suggested that the occurrence of virus in organs other than the respiratory tract might be a terminal phenomenon. Attempts to infect animals by routes other than by direct inoculation of the respiratory tract have given results suggesting that the virus does not survive easily in tissues outside the respiratory organs. Thus, Smith, Andrewes and Laidlaw (1935) reported that they were unable to infect ferrets by subcutaneous, intramuscular, intraperitoneal, intratesticular or intracerebral routes, and their work with the W.S. virus soon after its transference to mice suggested a similar lack of infectivity of the virus for mouse tissues other than those of the respiratory tract (Smith 1936). In particular they failed to find evidence of survival of the W.S. virus for even two days after its introduction into the mouse brain by direct inoculation.

Recently Daddi and Panà (1937) and Cerruti and di Aichelburg (1937) have suggested that the rabbit can be infected intracerebrally by the direct inoculation of lung filtrate from mice infected with the virulent W.S. virus. Daddi described a meningoencephalitis in rabbits thus inoculated, and Cerruti, although unable to find any signs of illness in the inoculated rabbits, stated that he had passaged the W.S. virus for three generations in rabbits' brains and had recovered the virus by inoculating the brain emulsion intranasally into mice. None of these authors reported any attempt to infect mice by the intracerebral route, however, and there has been, therefore, to date, no evidence that human influenza virus can multiply in the nervous system of the mouse even after direct inoculation. A single attempt to infect mice intracerebrally with the mouse-lung-adapted W.S. virus was made recently in this laboratory. Virus was demonstrated in the brains of mice two days after the intracerebral inoculation of mouse-lung filtrate, and at the same time two passes in series from brain to brain were carried out. The brain emulsion from the third generation of intracerebrally inoculated mice failed to produce any lesions in the lungs of mice after intranasal inoculation; hence no evidence of multiplication of the virus in the mouse brain could be obtained. Recently also Dr. Wilson Smith, in a single experiment, was unable to demonstrate any surviving virus in the brain of a rabbit which had been inoculated intracerebrally with virulent mouse filtrate (strain W.S.) three days previously.

The best evidence that the virus can attack nervous tissue has been furnished by Burnet. In 1936 Burnet reported that, after cultivation of the Melbourne strain of human influenza virus for sixty-three generations on the developing hen's egg, the chick embryo died and the brain of the embryo showed a peculiar hæmorrhagic condition. Burnet found virus in the affected brain but concluded that most of it was associated with the blood-cells, from which it could be recovered in abundance. In 1938 Burnet and Lush reported that the virulent mouse W.S. virus also produced hæmorrhagic encephalitis in chick embryos after only twenty-six passages on the chorio-allantoic membrane, the picture being identical with that produced by the Melbourne virus.

The present paper describes the development of a strain of the W.S. virus which can multiply in the brain of the mouse after direct intracerebral inoculation.

DIAGRAM SHOWING THE HISTORY OF THE DEVELOPMENT OF THE NEUROTROPIC STRAIN OF THE W.S. VIRUS


W.S. mouse passage virus
Hen's egg
Serial passage on chorio-allantoic membranes
Hæmorrhagic "encephalitis" of chick after 14 passes
Chick brain of 21st generation
Intracerebral inoculation of very young mice
Brain emulsion after 2 days
Intranasal test in mice gave typical influenzal lung lesions
Serial passage intracerebrally in mice
No symptoms or deaths for 11 passes
12th passage and subsequently deaths of mice with symptoms of encephalitis

HISTORY OF THE NEUROTROPIC STRAIN

The diagram given above shows the history of the development of this neurotropic strain of the W.S. virus. The material used for the initial inoculation

of the egg membrane was a filtrate of infected mouse lungs through a collodion membrane of average pore diameter 0·71 μ (Elford 1931). The virus had previously been passed 166 times through ferrets and then 196 times through mice. Serial passage on the hen's egg was carried out every two or three days, the chorio-allantoic membrane being used each time as the source of virus (technique of Burnet 1936b). No lesions were detected on the membrane for the first five passages, but thereafter fine flaky opacities and thickening of the membrane appeared constantly. After fourteen passages deaths of the embryos were observed, and some of the dead embryos showed the typical picture of hæmorrhagic encephalitis described by Burnet (1936a). This picture recurred in subsequent passages although not in every embryo, and a titration of an emulsion of the whole embryo by intranasal inoculation into mice showed that the embryo contained as much virus as did the chorio-allantoic membrane. Both, however, yielded virus of a somewhat lower infective titre for mice than the original mouse W.S. virus. The latter was regularly infective at a dilution of $1/10^6$ of a filtrate of a 5 per cent. emulsion of mouse lungs, but the egg membrane was only infective up to a dilution of $1/10^4$ or $1/10^5$ of the 10 per cent. emulsion. The brain of a dead chick embryo of the twenty-first generation of the serial passage was removed and emulsified in 5 c.cm. of broth mixed with an equal part of normal saline, and 0·02 c.cm. was inoculated intracerebrally under ether anæsthesia into each of a group of three very young mice 10–12 g. in weight. The mice did not become sick; they were killed on the second day after inoculation, and their brains were removed and emulsified in broth-saline mixture to a concentration of 10 per cent. by weight; the emulsion was inoculated into two groups of slightly older mice 12–14 g. in weight. Mice of one group received an inoculation of 0·05 c.cm. each intranasally under ether anæsthesia; the mice were killed after five days, and their lungs were examined for lesions. Mice of the other group were each inoculated intracerebrally with 0·02 c.cm.; some were killed after two days, and brain emulsions were prepared and used for inoculation both intranasally and intracerebrally into further groups of mice. In this way continual intracerebral mouse passage every two or three days was carried out, and the presence of influenza virus in the brains was tested for by intranasal inoculation. Survival of the influenza virus in the mouse brain of each passage was proved by the fact that the lungs of the mice inoculated intranasally with the brain emulsions showed lesions typical of influenza.

No symptoms suggesting virus infection were observed in the mice infected intracerebrally until the twelfth passage, when deaths occurred on the fifth, sixth and seventh days after inoculation, and signs of illness were observed shortly before death. Thereafter signs of illness and deaths occurred regularly, and few mice survived after receiving the full-strength 10 per cent. brain emulsion of the previous passage. Thirty-four passages have now been accomplished, and the picture in the inoculated mice is consistent. The clinical picture which has been observed in these intracerebrally infected mice comprises first a ruffling of the fur, then either excitement or else depression with hunching of the back and lethargy. Eventually, owing to increasing weakness and ataxia, the mice lie helpless on back or side, and, although occasional clawing movements of the hind legs have been seen, convulsions have only occurred as a terminal event, and true paralysis has not been observed. Occasional mice have exhibited rolling movements as in the rolling disease of mice described recently by Findlay et al. (1938), but this sign has not been constant. Death has been most usual on the fifth or sixth day after inoculation, and at autopsy the only abnormalities seen have been in the brain. When the skin has been removed from the vault of the skull, a hæmorrhagic appearance is obvious, and the brain shows a fine congestion of the vessels of the pia arachnoid. Histological preparations of the brains, examined with the kind help of Dr. Perdrau, have revealed a congestion of vessels without perivascular cuffing, a mononuclear cell infiltration of the meninges, and changes in the neurones, particularly of Ammon's horn. A polymorphonuclear cell reaction is seen along the track of the needle used for inoculation. The changes in the neurones consist of an enlargement of the nucleoli, which stain deeply with acid dyes, a breaking up of the remaining chromatin of the nucleus, and a fine acidophilic granularity throughout the whole nucleus. These changes, which are most obvious in preparations stained with Mann's stain, resemble those described by Burnet (1936a) in the ectodermal cells of the chorio-allantois infected with the Melbourne virus.

TABLE I—SERUM NEUTRALISATION EXPERIMENTS IN MICE

—	Tested intranasally* (lung lesions on 4th day)						Tested intracerebrally†					
IH_2 serum (horse)—												
Brain emulsion alone	2+	2+	2+	3+	3+	3+	D_3	D_4	D_5	D_6	D_6	D_6
" " and serum	0	0	0	0	0	0	D_5	D_8	D_9	S_{28}	S_{28}	S_{28}
Convalescent ferret serum (W.S.)—	(lung lesions on 5th day)											
Brain filtrate and saline	2+			2+		2+	D_6			D_6		D_7
" " serum 1 : 2 (final dilution) ..	0			0		0	S_{28}			S_{28}		S_{28}
" " " 1 : 10 " " ..	0			0		0	S_{28}			S_{28}		S_{28}
" " " 1 : 50 " " ..	Nsp.			0		Nsp.	S_{28}			S_{28}		S_{28}
Convalescent ferret serum (W.S.)—												
Brain emulsion and saline	4+			3+		3+	—					
" " serum 1 : 10 (final dilution)	Nsp.			0		0	—					
" " " 1 : 50 (" ")	0			0		0	—					
" " " 1 : 250 (" ")	0			0		1+	—					

* Figures represent the relative size of the lung lesion: 0 = no lesions, 1+ = small lung lesion, 2+, 3+ = larger lung lesions, 4+ = complete hepatisation of lungs. Nsp. = non-specific death of mouse.

† D indicates death of mouse, the accompanying number being the number of days after inoculation when death occurred. S_{28} indicates survival for 28 days after inoculation.

PROOFS OF THE PERSISTENCE OF THE INFLUENZA VIRUS

Four proofs have been obtained that influenza virus is still present in the brains of the mice after many intracerebral passages.

(1) Intranasal inoculation of mice under ether anæsthesia with brain emulsions from the serial passages has regularly produced lung lesions typical of influenza virus. The intranasally inoculated mice have usually been sacrificed on the fifth day after inoculation, and those mice receiving brain emulsions from the earlier intracerebral passages showed only small lung lesions when killed. More extensive lung lesions, or else complete hepatisation of the lungs with death before the fifth day, occurred in mice receiving intranasally brain emulsions from the seventh and subsequent intracerebral passages.

TABLE II—INTRANASAL IMMUNITY TEST OF SURVIVORS FROM INTRACEREBRAL W.S.

Generation of mouse passage (intracerebral)	Symptoms after intracerebral inoculation	Survivors	Interval in days	Result of intranasal test with ordinary mouse strain of W.S.*
5th	None	3	22	(lung filtrate 1/100) D_5 D_6 D_7
7th	"	2	17	D_5 D_7
10th	"	3	8	D_4 D_5 D_5
12th	Yes	4	30	(lung filtrate 1/10) D_5 So So So
14th	"	1	27	D_4
15th	"	4	23	S+ So S+ So
16th	"	2	31	So So

* D indicates death of mouse from complete hepatisation of lungs; the number following indicates the day on which death occurred after intranasal inoculation.
So = Survival 10 days with absence of lung lesions when killed.
S+ = Survival 10 days with small lung lesion when killed.

(2) The virus present in the brain has been successfully neutralised by mixing brain emulsions and filtrates with anti-influenzal sera and inoculating groups of mice intranasally and intracerebrally with the mixture. Table I shows the results of three neutralisation experiments with an immune anti-influenzal horse serum IH_2 (Laidlaw, Smith, Andrewes and Dunkin 1935) or serum from a ferret convalescent after infection with the ordinary mouse strain of W.S. virus. The horse serum protected the lungs completely when tested intranasally and saved the lives of three of the six mice tested intracerebrally. The ferret serum neutralised the brain emulsion completely, as judged by intranasal tests up to a final dilution of at least 1/50 (its titre against a filtrate of mouse lungs of the ordinary W.S. strain was 1/250). The ferret serum saved the lives of all the mice receiving a mixture of brain filtrate and serum, 1 in 10 and 1 in 50, although some of the mice showed signs of cerebral irritation.

(3) Mice surviving intracerebral infection with the neurotropic strain of W.S. after showing symptoms are immune to a subsequent inoculation intranasally with the ordinary W.S. virus. Table II shows that, although eight survivors from the early brain passages which had not shown symptoms were completely susceptible when tested intranasally, nine out of eleven mice from the later passages which did show symptoms were immune and showed either small or no lung lesions when killed ten days after the intranasal immunity test.

(4) Of two ferrets inoculated intranasally with mouse brain emulsions, one inoculated with emulsion kept for forty-eight hours at 0° C. showed no subsequent illness, but the other, inoculated with fresh emulsion from the twenty-fifth intracerebral passage, developed nasal symptoms and fever typical of influenza after an incubation period of forty-eight hours.

There seems no doubt, therefore, that influenza virus is present in the mouse brain after many serial passages and must therefore be multiplying abundantly, but proof that this virus causes the signs of illness and death of the mice is still not conclusive. Mice are subject to various spontaneous nervous diseases, such as lymphocytic choriomeningitis (Traub 1936), encephalomyelitis (Theiler 1937) and rolling disease (Findlay et al. 1938), and an extraneous mouse organism might therefore have been picked up during the repeated brain passages. Although the clinical picture and brain histology did not suggest any of these diseases, attempts have been made to exclude them as far as possible. In the first place, smears of infected mouse brain have been stained and examined and cultivation of brain emulsion on various media has been attempted, but always with negative results. Then an immune rabbit antichoriomeningitis serum was obtained by the courtesy of Dr. Findlay, and mixtures of this serum with brain emulsion after standing at room temperature for 1½ hours were inoculated into groups of mice both intranasally and intracerebrally. The intranasally inoculated mice all developed lung lesions typical of influenza, and the intracerebrally inoculated mice all died with symptoms typical of the disease induced by brain emulsions alone. Again, some brain emulsion was filtered through successive collodion membranes of average pore diameter 0·66 μ and 0·3 μ. The final filtrate produced typical influenzal lung lesions in four out of six mice inoculated intranasally and killed three out of six mice inoculated intracerebrally. Thus, although the potency of the virus was reduced by filtration through the tight membrane, it was not abolished; hence the agent causing the rolling disease of mice which will not pass through such a membrane (Findlay et al. 1938) is unlikely to have been responsible for the condition described. Finally, the virus of spontaneous mouse encephalomyelitis causes a flaccid paralysis of the hind legs of mice (Theiler 1937), and such paralysis has never been observed in any of the present mice.

SUMMARY

The history of the development of a variant of the W.S. strain of human influenza virus which is neurotropic for mice is described. No evidence has been obtained that any other mouse-pathogenic organism is associated with the neurotropic influenza virus.

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COLLOIDAL ALUMINIUM HYDROXIDE IN THE TREATMENT OF PEPTIC ULCER

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ALUMINIUM hydroxide has been used for the treatment of peptic ulcer, particularly in America, by a number of workers during recent years. The original paper of Roch (1922) has been followed by communications from Crohn (1929), Einsel and others (1930, 1932), Woldman and Rowland (1936, 1937), and O'Brien (1938). All these have given favourable opinions concerning the value of this substance, and the chief claim made for it is that, when administered in the form of aluminium hydroxide gel, it differs from alkalis in that, owing to its amphoteric qualities, it will neutralise hydrochloric acid in considerable quantities without becoming basic; it is claimed that this substance combines with hydrochloric acid to form aluminium chloride, and that, however much of it is given, an alkaline reaction cannot be produced; in the small intestine the biliary and pancreatic juices react with it to re-form sodium chloride and reprecipitate aluminium hydroxide. It is therefore claimed that colloidal aluminium hydroxide can act as an efficient neutraliser of gastric acidity, and that it is incapable of producing alkalosis.

We have carried out a preliminary investigation of this substance with a view to answering the following questions: (1) Can aluminium hydroxide gel be shown effectively to neutralise the gastric contents? (2) Is it an effective substance in the clinical treatment of peptic ulcer? (3) Is there justification for the claim that it cannot produce alkalosis?

DEMONSTRABLE EFFECTS ON GASTRIC SECRETION

To obtain information concerning the effect of aluminium hydroxide on gastric acidity under normal conditions we have examined specimens of the gastric contents in four cases of peptic ulcer. The results are shown in figs. 1–4, the following being the details concerning the four cases.

CASE 1.—Male, aged 39, with chronic gastric ulcer troubling him since 1923 and a history of several hæmorrhages. Fractional test-meal showed very high acidity. When he was fed through a stomach-tube with 10 oz. of milk at two-hourly intervals, there was a constant moderate amount of free hydrochloric acid in the stomach (fig. 1*a*). When 3 drachms of aluminium hydroxide was given one hour after each of such feeds, the free hydrochloric acid was practically abolished (fig. 1*b*). When the aluminium hydroxide was reduced to 1 drachm one hour after each feed, the neutralisation remained excellent (fig. 1*c*).

CASE 2.—Male, aged 49, with severe hæmorrhage from duodenal ulcer in 1935. Ulcer still present on radiography. Fractional test-meal showed low acidity. When he was treated by two-hourly feeds of 10 oz. of milk given by mouth, there was almost constant free hydrochloric acid in the stomach, reaching a high level (fig. 2*a*). When 1 drachm of aluminium hydroxide was given by mouth one hour after each of such feeds there was a very fair neutralisation, which became complete in the late hours of the day (fig. 2*b*). When the aluminium hydroxide was increased to 3 drachms between feeds, there was complete achlorhydria throughout the period of feeding (fig. 2*c*).

CASE 3.—Male, aged 26, with twelve years' history of duodenal ulcer confirmed by radiography. Fractional test-meal showed considerable secretion of free hydrochloric acid of "climbing" type. On two-hourly feeds of 10 oz. of milk there was a high level of free hydrochloric acid throughout the day (fig. 3*a*). When 1 drachm of aluminium hydroxide

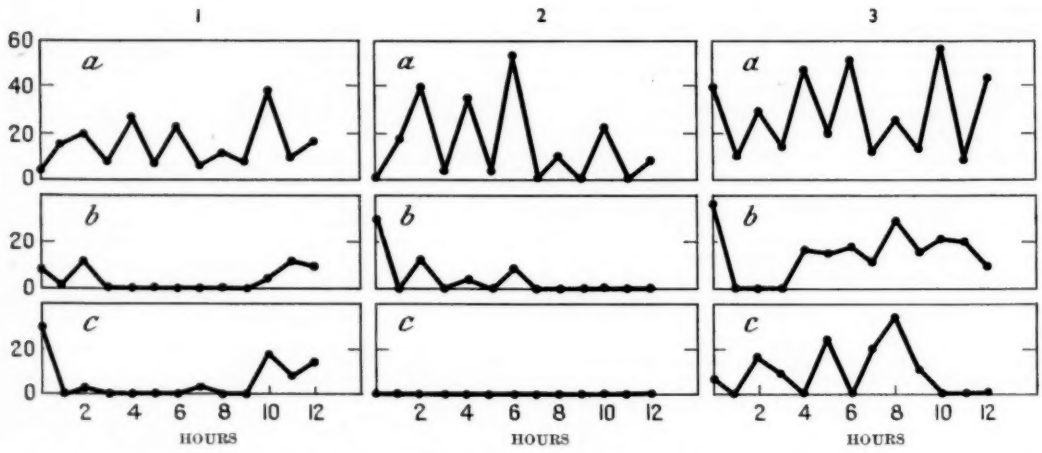

FIG. 1—Graphs of gastric acidity in case 1: (*a*) on two-hourly feeds of 10 oz. of milk; (*b*) on same diet plus 3 drachms of aluminium hydroxide an hour after food; (*c*) on same diet plus 1 drachm of aluminium hydroxide an hour after food.

FIG. 2—Graphs of gastric acidity in case 2: (*a*) on two-hourly feeds of 10 oz. of milk; (*b*) on same diet plus 1 drachm of aluminium hydroxide an hour after food; (*c*) on same diet plus 3 drachms of aluminium hydroxide an hour after food.

FIG. 3—Graphs of gastric acidity in case 3: (*a*) on two-hourly feeds of 10 oz. of milk; (*b*) on same diet plus 1 drachm of aluminium hydroxide an hour after food; (*c*) on same diet plus 1 drachm of alkaline powder (1 part of heavy magnesia, 2 parts of light magnesia, and 3 parts of chalk) an hour after food.

was given by mouth an hour after each of such feeds this acidity was somewhat reduced (fig. 3*b*). When 1 drachm of alkaline powder containing one part of heavy magnesia, two parts of light magnesia, and three parts of chalk, was substituted for the aluminium hydroxide, the neutralisation was somewhat more effective but not very much so, there still being considerable amounts of free hydrochloric acid present during the greater part of the day (fig. 3*c*).

CASE 4.—Male, aged 30, with one year's history of duodenal ulcer, confirmed by radiography. Fractional test-meal showed "climbing" type of curve; on 10 oz. of milk two-hourly there was considerable secretion of free hydrochloric acid, becoming less in the latter half of the day (fig. 4*a*). Aluminium hydroxide 1 drachm one hour after each feed produced a considerable reduction in acidity (fig. 4*b*), and 3 drachms given one hour after each feed produced almost complete neutralisation (fig. 4*c*). A similar effect was obtained with an alkaline powder constituted as for case 3 (fig. 4*d*).

We believe that these charts effectually demonstrate that aluminium hydroxide possesses, in doses of 1–3 drachms, neutralising powers as great as those of ordinary doses of alkaline powder.

CLINICAL RESULTS

We are of opinion that it is not justifiable at the present date to endeavour to treat a case of peptic ulcer by any medicinal substance with neglect of diet; and, since many cases show great clinical improvement when treated by diet alone, it is difficult to assess the relative value of various alkalis. We have, however, treated some thirty outpatients, of both sexes, between 29 and 72 years old and suffering from gastric, duodenal, or anastomotic ulcers, the duration of history varying from three months to forty years. In all these cases the diagnosis had been confirmed radiologically; all were placed on small frequent soft or fluid feeds with an alkaline powder taken one hour after each feed. After various periods of time each was asked to substitute aluminium hydroxide gel for the powder and to note any differences. In all save two cases the patients expressed a preference for the gel; nearly all were completely free from pain while taking this preparation, but in five cases there appeared to be no relief; in general the clinical impression was that the benefit was fully equal to what was derived from the alkaline powder. Apart from this impression, it was certain that diarrhœa, which is often very troublesome in patients under treatment with alkalis, was absent in every case except one. Five patients noted slight constipation, which was easily counteracted with liquid paraffin.

ALUMINIUM HYDROXIDE AND ALKALOSIS

The most important claim made for aluminium hydroxide is that it cannot produce alkalosis. We have made a series of careful observations on this point.

(1) In several patients we have observed the alkali reserve both after full doses of alkaline powder and after full doses of aluminium hydroxide without noting any change in the alkali reserve. In others there has been a slight rise in the alkali reserve after several days of alkali but none after aluminium hydroxide even when given in amounts as great as 3–4 oz. in the twenty-four hours.

(2) In a patient with a severe chronic duodenal ulcer in whom treatment with alkali has frequently been interrupted owing to the development of alkalosis the alkali reserve was unaffected by 1 oz. of aluminium hydroxide daily for a week. When this amount was doubled, a slight rise in the alkali reserve (from 52 to 65) was observed, but no symptoms of alkalosis were produced such as had frequently been seen when the patient was previously treated with magnesium hydroxide.

(3) In a patient with renal failure, in whom the urea clearance was 19 per cent. of normal, the administration of aluminium hydroxide 2 oz. daily for four days produced no increase in the alkali reserve.

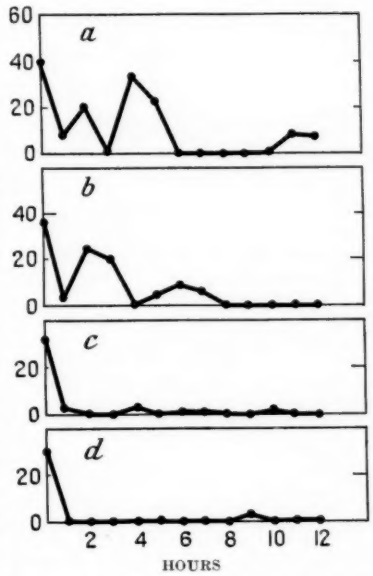

FIG. 4—Graphs of gastric acidity in case 4: (*a*) on two-hourly feeds of 10 oz. of milk; (*b*) on same diet plus 1 drachm of aluminium hydroxide an hour after food; (*c*) on same diet plus 3 drachms of aluminium hydroxide an hour after food; (*d*) on same diet plus alkaline powder (same composition as in case 3) an hour after food.

Our inquiry, admittedly limited in extent, therefore suggests that the claim that aluminium hydroxide does not produce alkalosis is justified.

SUMMARY

Observations on a number of patients indicate that aluminium hydroxide gel is an effective substance for neutralising the gastric contents, that it is a valuable adjuvant in the treatment of peptic ulcer, and that it is not liable to cause alkalosis.

We would express our thanks to Prof. E. C. Dodds, the chemical observations in this paper having been carried out in the Courtauld Institute of Biochemistry, Middlesex Hospital.

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CONFERENCE OF WORKERS FOR CRIPPLES.—The fourth World Conference of Workers for Cripples will be held at Bedford College for Women, London, from July 16 to 22. The conference will be officially opened on Monday afternoon, July 17, by Mr. Walter Elliot. The principal subjects for discussion will be preventive orthopædics in childhood (which will be opened by Mr. R. C. Elmslie); the education, vocational training and subsequent employment of the cripple, and the industrial cripple. Further information may be had from the organising secretary, 34, Eccleston Square, S.W.1.

CLINICAL ADMINISTRATION OF ANDROGENS

A COMPARISON OF VARIOUS METHODS

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Following the restoration of sexual function in a male castrate of 38 by injections of testosterone propionate (Foss 1937) I have taken advantage of the keen coöperation of this patient to compare the effects of a variety of androgens by injection, by mouth and by inunction.

On Oct. 29 and 30, 1937, the man received a total of 70 mg. of testosterone propionate by injection. Urine samples were collected for the next three days and these were sent to Dr. R. K. Callow at the National Institute for Medical Research for estimation of œstrogen and androgen. The results are shown in fig. 1. It was found that the excretion of androgen was 160 international units per day, and Dr. Callow calculated (see Callow 1938) that the extra androgen excreted in the urine in the first two days was 16 per cent. of the total dose given in terms of biological activity. This figure is much higher than is obtained in cases of prostatic enlargement treated with 50 mg. per week when 1–6 per cent. of the androgenic activity is excreted. After 58 days free from treatment a further estimation showed that the excretion of androgen had fallen to 34 I.U. per day. The administration of testosterone propionate also increased the excretion of œstrogen in the urine, whereas this was negligible after the period of rest.

Unfortunately estimations of urinary androgen were not carried out before any therapy was given, though it is doubtful whether the resting estimation was effected by the last subcutaneous injection of testosterone propionate. I feel sure that all this must have been excreted 58 days after the last injections, for even after subcutaneous implantation of solid tablets of testosterone weighing 50 mg. absorption is complete in about 2½ months. The androgen excreted during the resting period is almost certainly of suprarenal origin, and the potency which has been recorded in some eunuchs may also be due to a sufficiency of male hormone from this source. The androgen excretion is no indication of the physical state of the individual, and in this case the effect of withdrawing therapy was very obvious. Seven days after the injections were stopped the man was quite impotent, and in six weeks he lost 10 lb. in weight.

On Jan. 10, 1938, the administration of androgen was recommenced, and the succession of preparations given, with the intervening resting periods, are indicated in fig. 2. Throughout the experiment the eunuch was unaware of what he was being given whether by mouth, by injection or by inunction, though after the preliminary success he naturally assumed that the object of these substances was to restore lost function. That the success of the measures was due to suggestion can be denied, for whenever plain sesame oil was injected or the dose of male hormone was reduced, potency was either absent or deficient. I have tried to evaluate the lowest dose of each androgen which maintained normal sexual function.

It is apparent from this experiment that glandular extracts even when given in doses far in excess of the maximum suggested, are useless by mouth, a fact which bears out what Dodds (1938) has said as to the inactivity of all desiccated protein preparations of organs, except that of the thyroid. Injections of hydrosoluble and liposoluble elements of the testicle appear to have very little action even in large doses, and tend to upset patients. Investigation of the potency of another total testicular extract by injection (Erugon, Bayer) showed that even after six times the suggested dose, very slight potency was produced. This total quantity only represented about 60 comb-growth units (c.g.u.) per week, whereas a dose of 40 mg. of testosterone propionate effected normal potency and was equivalent to 2000 c.g.u. The equivalent dose of androstanediol was 800 c.g.u. per week. If the patient could have tolerated still larger volumes of erugon in oil or a more concentrated solution had been available, some idea of the dose necessary to produce normal potency might have been obtained. The obvious advantage in favour of testosterone propionate, however, is that a definite weight-dosage can be prescribed and reliance need not be placed on standardisation based on capon or rat assays.

When testosterone was used in conjunction with small doses of œstradiol benzoate some increased efficiency was obtained, for a slightly lower threshold value of male hormone was active and emission was noted for the first time. As androgen therapy in one form or other was continued, the volume of these emissions increased. With only medium doses, such as 40 mg. per week, full erection

RESULTS

TESTOSTERONE PROPIONATE—

By injection	40 mg. per week preferably in two divided doses = moderate potency. 60–100 mg. per week = full potency and possibly priapism if continued.
By inunction of ointment.	As well as can be estimated 126–140 mg. per week or three applications of about 25–30 mg. per week = normal potency for about four days.
By inunction of tincture.	40 mg. per day (280 mg. per week) = normal potency.

TESTOSTERONE—

By inunction of tincture.	20 mg. per day = moderate potency. 40 mg. per day (280 mg. per week) = normal potency
By mouth	Doses up to 30 mg. per day = no effect. 100 mg. per day = slight potency.

PROGESTERONE—

By injection	40–60 mg. per week in divided doses = moderate potency but effect not so lasting. Later 150 mg. per week = little effect. In conjunction with testosterone propionate prolongs effective duration.

ANDROSTANEDIOL—

By injection	400–800 comb-growth units per week at two-day intervals = moderate potency.

TOTAL TESTICULAR EXTRACT—

By mouth	"Androstin" = no practical effect.
By injection and by mouth.	"Androstin" = very slight potency.
By injection	"Erugon" in doses of 6 c.cm. per day = very slight potency.

SESAME OIL—

By injection	Impotence.

BLAND OINTMENT BASE—

By inunction	Impotence.

was not possible, but when 100 mg. of testosterone propionate was given in a week in conjunction with small doses of œstradiol benzoate, erection was fully turgid. Progesterone enhanced the action of the male hormone also and one injection lasted nearly six days, whilst even progesterone alone in sufficient dose maintained potency, but the effect was not so prolonged. More recently I have given larger doses of progesterone, 25 mg. daily, but with little effect.

A urine fraction thought to contain mostly androstanediol was found to sustain the man's potency and 400–800 c.g.u. was equivalent to about 40 mg. per week of testosterone propionate. Here again 800 c.g.u. of androstanediol is apparently equivalent to 2000 c.g.u. of testosterone propionate.

It seems that a rather larger dose is necessary to produce full potency by percutaneous application of ointment, a method which is nevertheless a great advance in therapy and one that is readily appreciated by the patient. Alcoholic tinctures containing testosterone were also effective when given percutaneously, but three or more times as much hormone was required in the alcoholic vehicle than in the ointment base. This may only be a question of insufficient inunction (Foss 1938). A comparison of alcoholic solutions containing testosterone and testosterone propionate in varying concentrations is extremely difficult but these clinical trials tend to favour the pure hormone when applied in this form, which bears out the experimental work of Moore, Lamar, and Beck (1938) using a cream vehicle. At the time when these tests were made it had not been possible to prepare an ointment in a fatty base containing testosterone in a concentration higher than 5 mg. per gramme, and this strength was insufficient to allow a comparison to be made between the efficiency of testosterone and its ester in ointment form. Now that a testosterone ointment containing 20 mg. per gramme is available comparison will be possible, though from the practical clinical standpoint even though testosterone propionate may be less potent, it has still the advantage of more ready solubility in a fatty base.

During the period of a year in which, except for minor intervals of rest, different androgens have been applied continuously, the growth of hair on the man's body and limbs has increased noticeably and he has now a normal moderate distribution of hair on the legs and thighs. The pubic hair is thicker and beginning to extend up the abdomen, where some hairs are now an inch long. The beard has also become more bristly and he has now to shave every day.

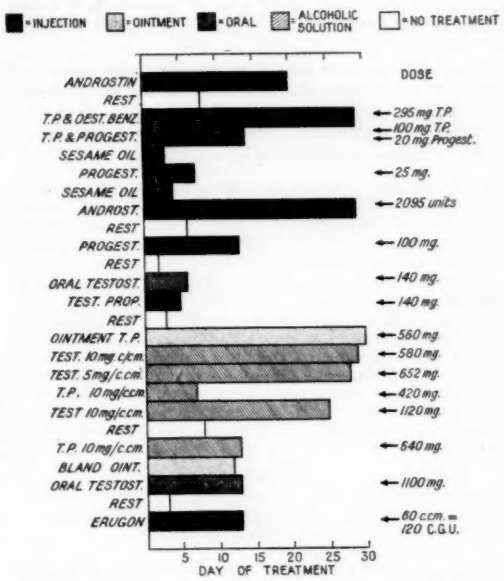

FIG. 2—Method of administration, dosage, and duration of treatment with various androgens. T.P. = testosterone propionate. Test. = testosterone. C.G.U. = comb growth units.

In this patient it is possible to estimate the ratio of the effective dosage of testosterone and testosterone propionate by different routes. Based on the initial finding that 40 mg. per week was the minimum dose productive of moderate potency the ratios were as follows:—

Subcutaneous to skin inunction of ointment	1:2–3
,, ,, inunction of tincture ..	1:6
,, ,, oral	1:20

These ratios must be taken as very approximate because they are founded only on observations of one isolated case, but they provide a basis for further clinical observation.

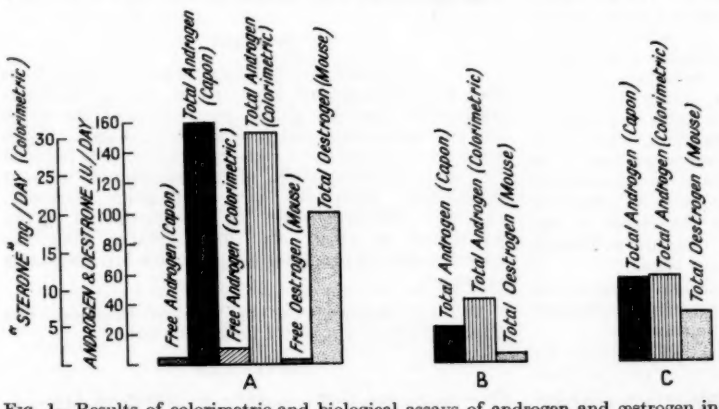

FIG. 1—Results of colorimetric and biological assays of androgen and œstrogen in the urine of the eunuch. A, average of three days following 70 mg. of testosterone propionate; B, after 58 days without treatment; C, figures per litre for mixed male urine extracted by the same method.

SUMMARY

A comparison has been made of the efficiency of various preparations of androgens given by different routes in maintaining sexual function in a male post-puberal eunuch.

The preparations were given in succession with short free intervals over a period of a year, and bland ointment and injections of sesame oil were given as controls.

The minimum effective dose of testosterone propionate when given by subcutaneous injection was 40 mg. per week. To obtain an equivalent effect it was found necessary to give

2–3 times this dose rubbed in as ointment, 6 times the dose rubbed in as tincture or 20 times the dose by mouth.

Progesterone was found to prolong the action of testosterone propionate when given in conjunction with it.

Total testicular extracts had little effect when given by injection and none by mouth.

I am indebted to Dr. R. K. Callow for making quantitative estimations of androgen and œstrogen in the urine, to Mr. C. W. Emmens for estimating gonadotrophic excretion, and to Prof. T. B. Davie and Dr. A. D. Fraser for examining ejaculate.

I am also indebted to Messrs. Schering for samples of testosterone propionate, œstradiol benzoate and progesterone in oil, testosterone propionate and testosterone in alcoholic solution and in crystalline form, and testosterone tablets for oral use; to Organon Laboratories for testosterone and testosterone propionate crystals, ointments of testosterone and testosterone propionate, bland base, and androstanediol in oil; to Messrs. Ciba for androstin and testosterone propionate in oil; and to Bayer Products Ltd. for erugon.

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UTERINE HÆMORRHAGE
INDUCED BY ORAL ADMINISTRATION OF PREGNENINONOL

BY PROF. BERNHARD ZONDEK, M.D.

AND

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As recently reported, we have successfully used progesterone to initiate uterine hæmorrhage in normally menstruating women during the intermenstrual stage (Zondek and Rozin 1938). We induced this intracyclic hæmorrhage by intramuscular injection of 10 mg. of progesterone daily for five days, beginning shortly after menstruation. We were also able to demonstrate that in secondary amenorrhœa bleeding could be induced, with the same total dose (50 mg. progesterone), without preliminary treatment with œstrogenic hormone. If in secondary amenorrhœa an œstrogen is first given, followed by progesterone, the hæmorrhage comes from a progestationally transformed mucous membrane, whereas in our cases it came from a proliferative mucosa. For the patient however the difference is immaterial. When progesterone was given by itself we observed that the breasts enlarged before the onset of the hæmorrhage and that signs of ovarian deficiency disappeared as soon as the bleeding began.

In primary amenorrhœa progesterone therapy is a failure, and this reveals a characteristic difference between primary and secondary amenorrhœa.

Œstrogenic hormone is effective when given by mouth, though its efficiency is only a fifth of that observed from parenteral administration (Zondek 1929). Oral administration of progesterone on the other hand is ineffective. Inhoffen and Hohlweg (1938) however have lately reported that their new preparation pregneninonol has a progesterone-like effect in animals when taken per os. Clauberg and Üstün (1938) have demonstrated that this is true of man too, and we have accordingly studied the question whether it is possible to induce uterine bleeding with the help of this preparation (1) in normally menstruating women during the intermenstrual stage, and (2) in secondary amenorrhœa, without preliminary treatment with œstrogenic hormone.

CASE 1.—A woman aged 23, with normal periods lasting six days; she had had a child three years previously. From the 7th to the 11th day of the cycle she received daily 60 mg. of pregneninonol per os, a total therefore of 300 mg. After an interval of sixty hours, on the 14th day of the cycle, a hæmorrhage set in which persisted for three days. Two hours after the onset of the bleeding a strip of the uterine mucosa was removed, and histological examination showed a mucous membrane of the beginning of the intermenstrual stage. Like menstrual blood the blood discharged from the uterus did not coagulate.

Thus in this case the effect of pregneninonol taken by mouth proved similar to the effect of progesterone given by injection: sixty hours after hormone administration was discontinued an intracyclic hæmorrhage took place.

CASE 2.—Woman aged 20. Menstruation had been formerly normal, but since her confinement (normal) two years previously she had had amenorrhœa. The uterus (7 cm. long) was retroverted. She received per os 60 mg. of pregneninonol daily for five days, and as in the last case hæmorrhage set in after sixty hours and persisted for three days. Ten hours after the onset of the bleeding a strip of the uterine mucosa was removed and examination showed that the glands were wide, in some places tortuous, more or less corresponding to the 17th day of the cycle. The blood discharged from the uterus did not coagulate.

In this case of secondary amenorrhœa, therefore, we succeeded in inducing bleeding by oral administration of 300 mg. of pregneninonol in exactly the same way as we previously induced it in secondary amenorrhœa by intramuscular administration of 50 mg. of progesterone.

In a third patient, a woman aged 40, who had had amenorrhœa for four months, we failed to obtain a hæmorrhage with 220 mg. of pregneninonol. This dose apparently was insufficient.

SUMMARY

(1) In normally menstruating women we have been able to induce uterine hæmorrhage during the intermenstrual stage by giving pregneninonol per os in the postmenstruum (intracyclic hæmorrhage). (2) In secondary amenorrhœa hæmorrhage has been induced by oral administration of pregneninonol without preliminary treatment with œstrogenic hormone. (3) The effective dose of pregneninonol given by mouth is about six times greater than the effective dose of progesterone given by intramuscular injection.

We are indebted to the firm of Organon, Oss (Holland), for a supply of pregneninonol.

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ISOTONIC SODIUM BICARBONATE SOLUTION IN DIABETIC COMA

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BEFORE insulin therapy was introduced diabetic coma was to a very large extent treated with sodium bicarbonate. Of late this treatment has been but little used, no doubt because in most cases of diabetic coma insulin therapy is so satisfactory that any other treatment of the acidosis is superfluous. In some cases, however, insulin seems to act slowly, and in such cases it may be desirable or imperatively necessary to conquer the acidosis by other means.

As I have previously reported (Kirk 1936), intravenous administration of isotonic (1·3 per cent.) solution of sodium bicarbonate is an excellent and safe remedy for the quick relief of acidosis. The dose can be calculated from the value of plasma bicarbonate after a line chart constructed by Van Slyke (1934) (see figure).

The isotonic solution is prepared from the best-quality powdered sodium bicarbonate, 13 g. being dissolved in 1 litre of sterilised water immediately before use. In hospitals where many patients with acidosis are received it will be practical to store such powders, weighed out at 13 g. each. The bicarbonate powder is not sterile, but experience has demonstrated that there is no risk in the intravenous injection of a solution made up immediately before administration. The solution cannot stand sterilisation by heat, for the bicarbonate gives off carbon dioxide and is changed into the strongly alkaline carbonate.

For subcutaneous administration an isotonic solution should be used, made by diluting a concentrated (8 per cent.) solution of sodium bicarbonate sterilised by passing through a Seitz filter. The concentrated solution of bicarbonate may be stored in glass ampullæ.

When treating the acidosis of diabetic coma it is generally necessary to determine the plasma-bicarbonate values several times during the first twenty-four hours, excessive formation of ketone acids often reproducing the acidosis; on the other hand, oxidation of these acids elicited by administration of insulin may cause a greater rise in the alkali reserve than corresponds to the amount of bicarbonate administered. Simultaneous treatment with bicarbonate and insulin, however, gives only a very slight risk of any considerable degree of alkalosis. In circumstances where it is impossible to make plasma-bicarbonate determinations more than 2 litres of bicarbonate solution should not be administered at the start of treatment. This dose will usually suffice to relieve the more severe clinical symptoms.

In this article two cases of diabetic coma are reported in which the effect of insulin on the acidosis was so slow that treatment with bicarbonate was considered to be indicated.

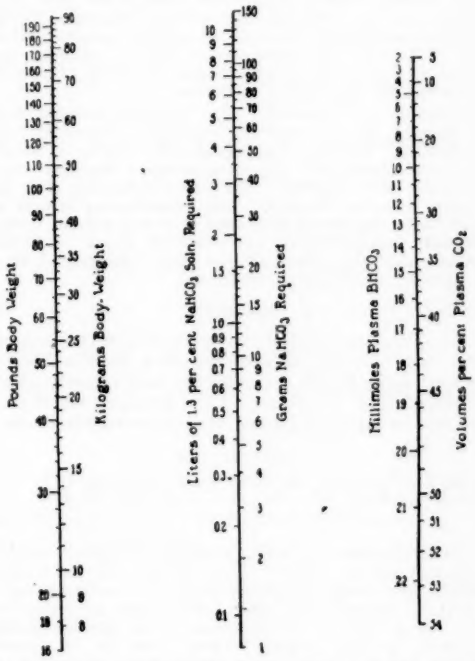
CASE-RECORDS

CASE 1.—A male retail dealer, aged 56, had suffered from diabetes for seven years, but contrary to his doctor's advice he had never taken any diet or been treated with insulin. He had not previously been comatose. Six days before admission he contracted an infection with high fever, cough, and tonsillitis. He became worse and, when the doctor was called on the day of his admission, was unconscious and raving.

On admission his consciousness was slightly blurred, but he could give fairly adequate information about his illness. He was distinctly short of breath and smelled of acetone. Examination of the lungs revealed numerous moist râles at the right infrascapular region. The blood-sugar was 490 mg. per 100 c.cm., and analyses of the plasma revealed severe acidosis (9·4 mM of carbon dioxide per litre of plasma).

Shortly after his admission (8.45 P.M.) 120 units of insulin was administered, together with 1 litre of saline subcutaneously (9–9.30 P.M.) and ample quantities of soda-water and milk to drink. In spite of this treatment the patient's condition became aggravated during the next few hours: he no longer answered when spoken to; his respiration was snoring, from time to time of Cheyne-Stokes type; and his colour became grey and his eyes dull and sunken. At 8.15 P.M. another sample was taken for blood-sugar and bicarbonate determination. The results revealed that, from a laboratory point of view, his condition had become worse, his blood-sugar was now 575 mg. per 100 c.cm., and his acidosis had grown more severe (5·6 mM of carbon dioxide per litre of plasma).

In view of the very grave condition of the patient the risk could not be taken of waiting longer for the insulin to act; therefore 2 litres of isotonic solution of sodium bicarbonate was given intravenously between 11 P.M. and 12 o'clock. As soon as 650 c.cm. had been injected the patient awoke from his comatose condition, answered questions in a normal manner, and talked spontaneously to his family, who had been called. Simultaneously his respiration, which before the administration of bicarbonate had been audible at a long distance, became of normal strength and depth but was still somewhat rapid. After the whole 2 litres had been given his condition had improved further, and he began to cough up large amounts of mucopurulent sputum. Examination


Pounds Body Weight
Kilograms Body-Weight
Liters of 1.3 per cent NaHCO3 Soln. Required
Grams NaHCO3 Required
Millimoles Plasma BHCO3
Volumes per cent Plasma CO2

Line chart for estimating the amount of sodium bicarbonate required in acidosis to raise the CO_2 content of the plasma to 60 volumes per cent. or the bicarbonate content to 25 mM per litre. A straight line cutting the scales for body-weight and plasma CO_2 or bicarbonate content will cut the middle scale at a point indicating the requisite dose of bicarbonate solution. (From Van Slyke.)

of the blood at 1 A.M. revealed a blood-sugar value of 400 mg. per 100 c.cm. and a rise in bicarbonate to 17·6 mM. As the blood-sugar was still much increased, 120 units of insulin was again administered at 3 A.M., with the result that the acidosis was fully relieved (24·4 mM) and the blood-sugar normal (118 mg. per 100 c.cm.).

During the whole period of coma the diuresis had been ample, blood-urea only slightly increased (65 mg. per 100 c.cm.), and the blood pressure at no time below normal.

During the following weeks the patient continued to bring up large amounts of sputum containing type VII pneumococci. Radiography showed a massive shadow at the base of the right lung, and for several days the temperature was very high. About ten days after admission he developed pneumonia on the other side, but in spite of these complications his general condition was not much affected. It was easy to regulate his diet and insulin dose, and a month after admission he was discharged in a perfectly satisfactory condition.

CASE 2.—A female designer, aged 21, had suffered from diabetes for five years and had all the time been treated with diet and insulin. After inflammation of the nose she suddenly became worse and of her own accord reduced her insulin intake, after which she developed in a few days a condition of pre-coma. Her doctor gave her 80 units of insulin, but as she did not improve she was sent to hospital five hours later.

On admission she was fairly short of breath but not deeply comatose. Her blood-sugar was only moderately increased (200 mg. per 100 c.cm.). Immediately after her admission (3 P.M.) 80 units of insulin was administered together with 1 litre of saline subcutaneously and ample quantities of milk and soda-water to drink. In spite of this treatment the patient's mind during the next hours grew more hazy, and at last she became unconscious. Bicarbonate determination at 6 P.M. revealed severe acidosis (5·5 mM of carbon dioxide per litre of plasma), and at 6.30 P.M. 2 litres of isotonic solution of sodium bicarbonate was given intravenously.

During the injection the patient became fully conscious and answered questions correctly and naturally. During the night 160 units of insulin was administered subcutaneously, together with glucose per rectum. Her consciousness did not again become blurred. The blood-urea, which on admission was much increased (178 mg. per 100 c.cm.), became normal during the next few days. A month after admission the patient was discharged in a perfectly satisfactory condition.

SUMMARY

(1) Two cases of diabetic coma with severe acidosis are reported. (2) Treatment with insulin did not rapidly bring about the expected improvement of the acidosis. (3) Treatment with isotonic solution of sodium bicarbonate immediately relieved the coma.

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INTERNATIONAL UNION AGAINST TUBERCULOSIS.—The eleventh conference of the union will be held in Berlin from Sept. 16 to 20, under the chairmanship of Dr. Otto Walter. The main subjects for discussion will be: the problem of the virulence of the tubercle bacillus (opened by Dr. Boquet, France, and Dr. A. Saenz, Uruguay); the value of systematic examinations for the detection of tuberculosis in subjects over 15 years of age (Dr. H. Braeuning, Germany); the rehabilitation of the tuberculous (Sir Pendrill Varrier-Jones, Great Britain, and Dr. E. Bachmann, Switzerland). Further information may be had from the National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C.1.

CARDIAZOL TREATMENT OF SCHIZOPHRENIA

AND ALLIED STATES IN INDIAN PATIENTS

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MANY articles have been published on Cardiazol convulsion therapy in schizophrenia, but apart from the paper by Dhunjibhoy [1] from the Ranchi Mental Hospital, all of them have described experience with Europeans and Americans. The present paper summarises the observations on Indian and Anglo-Indian patients treated with cardiazol under tropical conditions in the Mysore Government Mental Hospital, Bangalore, South India.

The following preliminary observations on patients in Indian mental hospitals are relevant:—

(1) The proportion suffering from organic states—post-pyrexial, toxic, or exhaustive—is far greater than that observed in European hospitals.

(2) States of excitement are commoner than states of depression. (It is possible that both climate and diet help to determine the types of reaction.)

(3) Most patients are under-nourished and weak. Nutritional anæmias and vitamin deficiency are either frankly responsible for the mental disorder or colour the clinical picture. Mere attention to physical needs and general health often effects a spectacular recovery.

Because of the weak constitution of these patients modifications in the dosage and frequency of drugs producing shock, such as insulin and cardiazol, and of pyrexial agents are necessary. So far as cardiazol is concerned, one injection a week is often sufficient, and more than two are rarely necessary. If no improvement is noticed after six convulsions, the injections are discontinued. If they are given more often severe vomiting and diarrhœa are produced. I may add that insulin shock in patients in the tropics is very severe, uncertain in its effects, occasionally fatal in spite of all precautions, and hence much better avoided.

Induction of convulsions with cardiazol in schizophrenic and allied states was first tried in the Bangalore Mental Hospital in September, 1937, and has gradually superseded insulin shock therapy, first tried in December, 1935. Most of the patients were suffering from schizophrenic states, the dull and seclusive, the stuporous, and the catatonic. Four were depressives, two hysterics, and four confusional-reaction types. The first two patients on whom the injections were tried are referred to in some detail. The observations on the other patients are recorded in the accompanying table.

CASE-RECORDS

Our first patient (case 1 in the table) was a college student, aged eighteen, in a catatonic stupor. Prolonged narcosis, baths, and induced pyrexia were of no avail. With one convulsion with cardiazol (5 mg.) he came out of his stupor and became friendly and coöperative. After eight weekly injections he was discharged as "recovered." I interviewed him in September, 1938, about eight months after discharge. He has maintained his improvement and gone back to college, where he is doing well.

The second patient (case 15) was a woman, aged 28, who developed a stupor two weeks after the birth

1. Dhunjibhoy, J. E. (1938) *Lancet*, 1, 370.

TABLE OF RESULTS

Case	Age	Sex	Duration of disorder before admission	Date of admission	Reaction type	Injections			Remarks
						Date of first injection	Subsequent	Total	
1	18	M.	15 days	May 6, 1937	Schizophrenic (catatonic)	Sept. 25, 1937	7	8	Recovered and discharged, Nov. 18, 1937
2	25	M.	2 years	Nov. 22, 1937	Schizophrenic (paranoid)	Feb. 15, 1938	4	5	Improved and discharged, May 26, 1938
3	24	M.	30 days	Dec. 5, 1937	Catatonic stupor	Feb. 15, 1938	2	3	Recovered and discharged, April 11, 1938
4	20	M.	21 days	Dec. 2, 1937 (readmission)	Schizophrenic (catatonic)	June 23, 1938	—	1	No improvement in mental condition, but improved from catatonic condition
5	20	M.	1 year	Mar. 19, 1938	Catatonic stupor	June 23, 1938	1	2	Recovered and discharged, July 30, 1938
6	16	M.	90 days	May 6, 1937	Schizophrenic (paranoid)	Oct. 10, 1937	3	4	No improvement; discharged at request, Nov. 2, 1937
7	23	M.	7 days	Nov. 11, 1937	Schizophrenic (paranoid)	Mar. 15, 1938	5	6	No definite improvement; discharged Sept. 17, 1938
8	26	M.	90 days	July 4, 1938	Post-pyrexial (catatonic)	July 11, 1938	4	5	Recovered from catatonia; still in hospital
9	25	M.	90 days	July 24, 1938	Hysterical reaction	Aug. 6, 1938	2	3	Improved
10	23	M.	15 days	Sept. 3, 1938	Schizophrenic (paranoid)	Sept. 19, 1938	1	2	No definite improvement; still in hospital
11	24	M.	15 days	Aug. 2, 1938	Post-pyrexial (catatonic)	Aug. 31, 1938	6	7	Recovered
12	30	M.	30 days	July 25, 1938	Paranoid tendency (syphilitic)	Sept. 23, 1938	—	1	No improvement
13	30	M.	8 mths.	Jan. 16, 1938	Schizophrenic (catatonic)	July 5, 1938	1	2	Improved as regards catatonia
14	35	M.	2 mths.	Sept. 18, 1937	Schizophrenic	Sept. 7, 1938	—	1	No improvement
15	28	F.	1 year	Sept. 18, 1937	Catatonic stupor after childbirth	Feb. 28, 1938	49	50	Lives a cardiazol life
16	27	F.	2 years	Dec. 12, 1937	Catatonic stupor	Mar. 16, 1938	1	2	Recovered
17	25	F.	10 mths.	Sept. 21, 1937	Schizophrenic depression (organic)	—	1	2	No improvement; still in hospital
18	28	F.	—	Aug. 12, 1935	Schizophrenic (catatonic)	Feb. 24, 1938	3	4	No improvement; discharged at request, Aug. 3, 1938
19	30	F.	30 days	June 10, 1938	Hysterical reaction (catatonic)	June 23, 1938	6	7	Recovered and discharged, Aug. 11, 1938
20	32	F.	2 days	June 13, 1938	Depressive state	July 4, 1938	7	8	Recovered and discharged, Aug. 19, 1938
21	18	F.	1 year	June 8, 1938	Catatonic after childbirth	June 24, 1938	3	4	Improved and discharged at request, Aug. 18, 1938
22	14	F.	3 years	Jan. 7, 1938	Hysterical (post-pyrexial)	April 15, 1938	2	3	Improved and discharged at request, June 4, 1938
23	25	F.	2 years	Mar. 17, 1938	Schizophrenic reaction	Mar. 21, 1938	11	12	No definite improvement; discharged at request, Sept. 18, 1938
24	25	F.	2 years	Mar. 26, 1938	Schizophrenic depressive state	April 29, 1938	2	3	Improved and discharged, June 26, 1938
25	32	F.	30 days	April 9, 1938	Depressive state (paranoid)	May 3, 1938	3	4	No definite improvement
26	24	F.	4 mths.	June 20, 1938	Schizophrenic (catatonic)	July 17, 1938	7	8	Improved and discharged, Sept. 26, 1938
27	40	F.	4 mths.	July 16, 1938	Schizophrenic	July 22, 1938	4	5	No definite improvement
28	20	F.	90 days	July 9, 1938	Depressive state	July 28, 1938	1	2	Improved mentally; died of encephalitis, Sept. 19, 1938.
29	18	F.	1 year	Aug. 1, 1938	Schizophrenic (catatonic)	Aug. 9, 1938	—	1	Recovered from catatonia; mentally the same; still in hospital
30	24	F.	60 days	July 20, 1938	Schizophrenic (paranoid); puerperal	Aug. 15, 1938	—	1	Improved
31	35	F.	30 days	July 20, 1938	—	Sept. 4, 1938	2	3	Recovered
32	22	F.	15 days	—	Schizophrenic (catatonic)	April 9, 1938	—	1	—
33	40	M.	4 mths.	Nov. 12, 1936	Schizophrenic	June 4, 1938	2	3	Improved and discharged, June 17, 1938
34	40	F.	4 mths.	Aug. 16, 1938	Hysterical	Oct. 3, 1938	3	4	Recovered

of her fourth child and was admitted to hospital almost immediately. She was in a cataleptic trance, immovable, and had to be fed and clothed and have all her bodily needs attended to. The history stated that she had had a similar stuporous phase after her second confinement, from which she recovered spontaneously after three months. There was no mental breakdown after her third child. For nearly four months routine methods of treatment were tried but were of no use. Convulsions were then induced by cardiazol. She reacted very well to the first injection. She came out of her trance-like condition, became friendly and coöperative, and her conversation was sustained, sequential, and relevant. But three days later she sank back into her stupor and was revived by another injection only to sink back again into stupor after a few hours. The amount of cardiazol needed to induce a convulsion has increased from 5 to 22 mg. The lucid intervals depend entirely on cardiazol. She has had nearly fifty injections and is living a cardiazol life analogous to the insulin life of a diabetic. She is still in hospital.

OBSERVATIONS AND CONCLUSIONS

(1) Cardiazol is a valuable means of treatment. Of 34 patients 12 have recovered and 10 have improved; 12 have shown no improvement.

(2) Compared with other methods of shock treatment, cardiazol therapy is relatively safe. This is of particular importance in Indian patients, most of whom are weak and undernourished, and in whom insulin has a limited application.

(3) The following adverse effects have been noted. (*a*) Vomiting and diarrhœa in all patients if cardiazol is given too frequently. Five patients were more than ordinarily susceptible, and in them even one injection produced severe diarrhœa. (*b*) The convulsions are usually like epileptic fits; but atypical fits—delayed, recurrent, or continuous—were all observed. (*c*) After a few fits patients become apprehensive of further injections.

(4) The pupils, during the fit, in all cases were widely dilated; but in a considerable number they showed alternate contraction and dilatation lasting for a maximal period of nearly three minutes.

(5) Three intelligent well-behaved patients described a curious feeling of lightness, of levitation, and that they felt they had no bodies at all. This feeling akin to depersonalisation is worth notice.

(6) The improvement effected by cardiazol convulsions has been not only in frankly schizophrenic stupors but also in depressions and confusional states. In view of the tendency to natural remissions and spontaneous recoveries in these states, it appears that cardiazol is not a "specific cure" for any of these conditions. It is probable that its action is to hasten recovery.

(7) Cardiazol seems to exert maximal beneficial effect on early cases of mental disorder characterised by emotional and intellectual blocking and reduced psychomotor activity, but without severe destruction of nerve-cells.

(8) Some patients have to live a "cardiazol life" for prolonged periods analogous to the insulin life of some diabetics.

"... I am convinced that the reputation and success of the dentist of the future will depend more on his sound nutritional knowledge on how to prevent dental defects than on his skill to execute beautiful M.O.D. gold inlay restorations, or to remove impacted teeth surgically."—J. MENZIES CAMPBELL, in his presidential address to the West of Scotland branch of the British Dental Association, *Brit. dent. J.*, Feb. 15, p. 219.

ISOLATED AVULSION FRACTURE OF THE LESSER TUBEROSITY OF THE HUMERUS

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WHEREAS various injuries, such as dislocation of the jaw and of the shoulder, have been described in connexion with convulsion therapy of schizophrenia, isolated fracture of the lesser tuberosity of the humerus—i.e., fracture not accompanied by any other injury—is an extremely rare accident in ordinary surgical practice and has hitherto been unknown as a complication of this treatment. In other circumstances such a fracture has been reported by Hartigan (1895) and Stangl (1933). It is therefore worth while to report a case due to sudden contraction of the subscapularis muscle, the tendon of which is inserted mainly into the lesser tuberosity.

A woman aged 36 was admitted to the Leicestershire and Rutland Mental Hospital on Oct. 28, 1938. She was well nourished and in good physical condition. Three months after the birth of a child by cæsarean section she developed a confusional psychosis; as the confusion cleared, it was noticed that she had definite persecutory delusions and aural hallucinations. She had been in another mental hospital during the acute stage of her illness.

Convulsion therapy was begun on Nov. 4. The convulsant used was triazol 156 (Azoman). At the first injection she was given 2 c.cm. of a 5 per cent. solution intramuscularly and had five major epileptiform convulsions. To control more readily the number of convulsions following injection of the drug, at three subsequent treatments 2 c.cm. was given intravenously and was followed by one epileptiform attack on each occasion. At the fifth injection, as the tonic contraction of the muscles began, there was an audible crack, and later she complained of severe pain in the left shoulder.

On examination there was some swelling of the region involved but no obvious bony deformity. Internal rotation of the arm was limited and painful, and any attempt at external rotation produced very severe pain. There was definite localised tenderness over the anteromedial aspect of the shoulder. A radiogram showed an abnormal shadow lying downwards and medially from the humeral head. There was no other injury. The case was seen by Mr. R. S. Lawson, consulting surgeon to the hospital, who confirmed a diagnosis of avulsion of the lesser tuberosity of the humerus and decided to attempt fixation by open operation.

The operation was performed on Nov. 29. The head of the humerus was exposed, and it was found that a large part of the lesser tuberosity had been avulsed and displaced downwards and inwards. The subscapularis tendon had also been torn at its insertion. The head and neck of the humerus and the greater tuberosity were intact. The tendon was repaired, but the avulsed fragment was such a frail shell of bone that it was not found practicable to fix it.

I am indebted to Dr. K. K. Drury, medical superintendent of the hospital, and to Mr. R. S. Lawson, hon. surgeon to Leicester Royal Infirmary, for permission to publish these notes, and to Dr. G. A. van Someren for the radiogram.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE

AT a meeting of this section held on Feb. 24 under the presidency of Dr. J. A. H. BRINCKER, a discussion took place on

The Proper Sphere of State Medicine

Dr. ALFRED COX (London) said that this question had been more often debated inside the medical profession during the last 25 years than any other. He himself envied, though he could not agree with, those who had no hesitations and were sure that the proper sphere of the state in the provision of medical attendance is to make it free to all, like primary education. He had to confess that the only solution he saw was *solvitur ambulando*. Clearly the last word in the decision must rest with the community and not with the medical profession, but we should be able to offer a reasoned opinion. He felt it an imperative duty to keep the medical profession and the rights and privileges and welfare of the individual free from the shackles of standardisation—a condition inevitably resulting from government control. He agreed that the state has a legitimate and necessary sphere in dealing with the health of the community en masse. In this sphere the civil servant was seen at his best but the very qualities distinguishing the medical official unfitted him to deal with the individual. The attitude of a patient towards his own doctor was quite different from his attitude towards a state or municipal officer. The growth of specialisation meant that one man must specialise in mass medicine, the other in individual medicine, and patients wanted to be looked after by somebody who would be their own doctor and would owe no allegiance to anyone else. The idea of the robot patient putting a coin into the robot doctor and receiving all he needs for diagnosis and treatment was abhorrent to human nature. Even in authoritarian countries necessities such as food, housing and clothing were left to individual choice; yet a much better logical case could be made for free state provision of food, clothing and housing than for schooling and doctoring.

His views did not exclude the state from giving assistance where necessary; indeed he felt sure that in the near future there would be more and not less state aid for medical attendance. He had no fear of the old bogy of "socialism"; it had been well said that "you could get our people to accept any amount of socialism so long as you did not call it Socialism." He was not entirely satisfied with the provision of medical attention at the moment but he believed that an extension of some form of insurance was the best solution. This had the advantage of making the individual feel that he is, as far as possible, providing for his own medical attention himself. The proportion of cost to be borne by the state had already been shown to be small, and Dr. Cox cited the universities and the Medical Research Council as a proof that a moderate amount of state aid is not incompatible with freedom in essentials.

His own answer to the question under debate was that the proper function of the state is to leave the actual provision of medical attendance as far as possible to a free profession dealing with a free people; to encourage the profession and people to make voluntary arrangements where practicable, preferably on an insurance basis; to make such arrangements compulsory where the voluntary principle does not work; to aid financially those citizens who cannot provide entirely for themselves; and to keep the "dead hand" of officialdom as far off as possible.

Dr. ANDREW TOPPING (London County Council) confessed that he was a "whole-hogger" in support of a state medical service when he observed the present conditions and the present provision for medical attendance for the great bulk of the people. The majority of doctors did not continue their training by holding resident appointments; they had no postgraduate education; and they were unable to keep up to date by reading medical literature after qualification: medicine at present was a rather unethical trade. During the medical student's training he was constantly urged not to treat symptoms, but from the moment of qualification he did almost nothing else. No wonder that Dr. Robert Hutchison had said that if all doctors went on strike very little difference would be seen in the death-rate. We should face the fact that the sole use of the average general practitioner was to be a grateful and comforting mental poultice. The conditions under which they work must lead to a lowering of income if they were honest, or to a loss of self-respect if they were not. These unsatisfactory conditions were not confined to the general practitioner. Why was it necessary for all the specialists in London to congregate in Harley Street? The would-be specialist had to lead the life of an anchorite for ten years after qualification until he developed the three requisites for a successful physician—baldness, horn-rimmed spectacles and hæmorrhoids—the first to give him an appearance of experience, the second an air of wisdom, and the third that anxious look so comforting to the patient. He did not wish it to be thought on the other hand that all was well in the public-health world: in the smaller areas the outlook was often far too parochial. Throughout the whole field of medicine, in his opinion, present conditions led to a struggle between the soul and the pocket—a struggle in which the pocket was bound to win.

He realised all the difficulties which would have to be faced but he was convinced that the problem of avoiding red tape and the other errors of officialdom could be solved: the results of the 1929 Local Government Act had exceeded the most optimistic forecasts. His own dream was that, with an assured future, a finer race of medical students might be evolved, those of poor quality having been eliminated early in their career. Every doctor should do two years in hospitals after qualification, although the present curriculum might be shortened and simplified. He would like to see clinics working in the closest coöperation with hospitals, and with the doctors that served them paying the necessary domiciliary visits. The whole must be under a largely non-political control. He had no use for the argument that those in receipt of a fixed salary did only the minimum of work. Nor had he any passionate affection for the principle of free choice, since free choice was at present largely non-existent.

Dr. FRANK GRAY (Wandsworth) agreed that present arrangements are in many ways unsatisfactory, especially in the economic bar to adequate medical attendance, the lack of coördination between practitioners, clinics and hospitals, and the lack of attention

paid to the mental aspects of disease. He felt that the successes achieved by the state—such as they are—were in problems concerning the community as a whole. The marks of the government official were self-contentment, regard to appearances rather than facts, and the avoidance of trouble. These characteristics had been clearly shown in the arrangements made for the protection of the country against aerial attack. He agreed with Dr. Cox on the one hand that the system of fees per attendance would have to go, and on the other hand that a salaried profession would lose its individuality: an extension of health insurance was his solution also.

Dr. E. R. C. WALKER (Aberdeen) was convinced that the present system has led to the abandonment of the scientific approach to medicine. The state of health of a person at any moment was the measure of his success in reacting to his environment and the essential function of the state was to alter the environment in a favourable direction. The proper sphere of state medicine was therefore the whole field of medical policy and he thought that the distinction between health en masse and the health of the individual was rather an artificial one. It was not by chance that we spoke about the medical services, since medicine was a service and not a business. He thought that the extension of the national health-insurance system would perpetuate the grave disadvantages inherent in it. These disadvantages were primarily (*a*) that it is a sickness and not a health service, (*b*) that the financial nexus involved in certification vitiates the proper relation between doctor and patient, and (*c*) that a per-capita remuneration is unsound and introduces an improper cash bias. He himself would like to see a salaried national service which would preserve as far as possible freedom of choice for the patient and which would be administered largely by the profession itself.

Mr. SOMERVILLE HASTINGS (London) felt that, when once the state had interfered, the extension of its control was inevitable. Interference by the state in such matters as water-supply was of very long standing and it had soon been realised that in order to prevent, one must also treat: hence state "encroachment" in infectious diseases, tuberculosis, venereal diseases, and so on. The treatment of cancer was now being taken over by the state: next might come rheumatism, fractures and so on. Since diagnosis must precede treatment and the all-important person for diagnosis was the general practitioner, he must inevitably be drawn into the state schemes. Mr. Hastings agreed that the general practitioner must be an individualist, but that need not prevent him being included in a general service; the good points of the general-practitioner system might be grafted into a state system. If insurance was to be compulsory he could see little difference between an insurance system and a system paid for by the rates and taxes. It was possible to maintain a system of free choice, but he did not think it important, since there was no sphere in which it is so difficult for the individual to estimate the value of the service he receives.

Dr. W. A. DALEY (London County Council) had recently had visitors from two countries in which the system was practically a state medical service: they had been enthusiastic in praise of their respective systems. He thought that an extension of the clinic system, as envisaged by Dr. Topping, was inevitable, at least in urban areas. The national health-insurance system had not come up to expectations. It did nothing to prevent sickness. He thought that the principle of free choice was largely a relic. Nowadays persons had transferred their affection from individual doctors to institutions, and the failure on the part of insured persons to transfer to another doctor on the death or retirement of their own doctor showed what little store they set by the principle. As far as political control was concerned, his own experience was that the party in opposition, whatever its political complexion, tried to stimulate the party in power to action and this was a good thing.

Dr. C. F. WHITE (M.O.H., City of London) felt that at present it is impossible for the doctor to be frank. His own father had started in practice with that intention but soon found it impracticable. He thought a knowledge of the home conditions essential to the doctor who has to give treatment and therefore any system must provide for a family doctor. Under a state system the highest level attained by individuals might be lower than under a fiercely competitive system, but surely the low levels could not possibly be so low as they were now.

Dr. R. P. GARROW (M.O.H., Hornsey) thought that the term "mass medicine"—introduced, he thought, from Russia—was a mistake. He quoted Sir Kingsley Wood as saying that within a brief period the consumption of bottles of medicine under the national health-insurance system rose from 44 million to 66 million: if anything was "mass medicine" surely this was? There was no microbial disease whose cause had been discovered by a doctor practising in this country; whereas the Royal Army Medical Corps—crushed by Dr. Cox's "dead hand" of officialdom—had discovered the cause of a number of these diseases.

MEDICO-LEGAL SOCIETY

AT a meeting of this society held at Manson House on Feb. 23, with Mr. Justice HUMPHREYS, the president, in the chair, a discussion on the

General Medical Council

was opened by Mr. D. HARCOURT KITCHIN, barrister-at-law. He suggested that, although the general public and medical men were interested in the council, they knew on the whole extremely little about it. Neither doctors nor laymen went to the public gallery of the council from interest in the proceedings, and the only persons who saw the council at work were the doctors who were summoned to appear before it, the lawyers who argued for and against them, and journalists. Many of the public confused the functions of the council with those of the British Medical Association and thought it was like a trade-union. Actually, it was a department of state set up by the Medical Acts, 1858–86, to keep a register of persons who were properly qualified to practise medicine. For this purpose it must supervise education and examination, and so it necessarily consisted largely of representatives of the licensing bodies. The remainder of its 39 members were 5 persons nominated by the Crown and 7 direct representatives of the medical practitioners of England, Scotland and Ireland. The council also issued the British Pharmacopœia.

For the purpose of keeping the register, the council had drawn up a series of standing orders which had been duly approved by the Privy Council and Parliament. By section 14 of the 1858 act, the registrar must erase names of all practitioners who had died and make necessary alterations in addresses or qualifications. For this purpose he wrote from time

to time letters of inquiry to doctors on the register, and if he received no answer within six months he erased the name. Sometimes a ship's surgeon would find on applying for a post that his name had disappeared from the register through his failure to receive a letter from the registrar; he could then have his name restored on complying with certain formalities. Theoretically, a doctor whose name was so erased might transgress the law unwittingly through signing death certificates or prescribing dangerous drugs, but in practice such prosecutions were probably unknown. If a licensing body cancelled a doctor's qualifications, it must notify the registrar, and he was then bound to erase those qualifications from the register. In practice he erased the name also. A practitioner could not now have his name erased at his own request. The standing orders had once allowed this, but the council had been advised that the act did not permit it.

A doctor's name might be erased penally on one of two grounds: conviction of a criminal offence, or a finding by the council "after due inquiry" that he was guilty of "infamous conduct in a professional respect." The "due inquiry" was one containing the substantial elements of natural justice (Leeson *v.* G.M.C., 1889) and "infamous conduct" had been stated by the Court of Appeal in Allinson *v.* G.M.C. (1894) to be something that would be reasonably regarded as disgraceful or dishonourable by a doctor's professional brethren of good repute and competency. The procedure of the council resembled that of a criminal court, except that witnesses were not sworn. The council was assisted by a barrister sitting as judicial assessor; it deliberated in private, and the president announced its decision in public. The council could punish only by erasure, but had adopted a practice in cases which did not deserve this severe penalty of suspending judgment until a named future session, when the doctor would be required to appear again and bring evidence of good conduct in the interval. An erased name might be restored after a varying period. There was no appeal from a decision of erasure, except on the ground of gross irregularity of procedure, of which the council could not conceivably be guilty.

Mr. Kitchin criticised the composition of the council and its penal procedure, chiefly on grounds which the council had no power to remedy. He maintained that a tribunal consisting of 39 medical men, most of them unacquainted with general practice, was unwieldy and unsuitable. The medical mind, trained to be initially receptive of evidence and to be critical only at a later stage, was not suitable for judicial inquiry. The worst defect in the proceedings was, however, the inability of the council to compel the attendance of witnesses, to administer the oath, and to award costs against a party whom it considered at fault. A vindictive complainant might well find it worth while to spend money on bringing witnesses to London and maintaining them during the hearing, on a scale of reimbursement into which no one could inquire. The respondent doctor could only bring such witnesses as he could persuade to come, and could not recover his expenses even if the charges were proved to be unfounded. The absence of an oath opened the door to all manner of false evidence. The council was therefore far too apt an instrument of private vengeance by, for example, a partnership against a competing practitioner, a jealous husband against a doctor whom he accused of seducing his wife, or a woman infuriated at the decline of a doctor's affections. The council seemed to adopt too lenient an attitude towards drunkenness, and too severe or indiscriminating an attitude towards doctors accused of sexual misconduct. He urged the council on the one hand to remember the danger to the public represented by a drunken doctor, and on the other to regard each allegation of sexual misconduct on its merits and inquire whether there had been a substantial breach of professional confidence.

He outlined the disciplinary procedure of the Law Society, which kept the solicitors' roll, and suggested that a new Medical Act should provide for a penal tribunal consisting only of 5, perhaps of 3, members, of whom the majority should be general practitioners and the chairman a barrister used to conducting judicial inquiries. This tribunal should have power to summon witnesses and administer the oath, and discretion to award costs. It should be able to suspend a doctor from exercising the statutory privileges of registration or to impose a fine. An appeal should lie from its decision to the Divisional Court. Hearings in camera should be restricted to the taking of "physiological" evidence, and to cases in which justice could only be done by a private hearing. The reporting of "divorce" evidence should be restricted as in the courts. Direct representation of practitioners should be enlarged, and a named proportion of these representatives should be women. He did not regard the council as too old, but would like to see more younger members.

Sir HENRY BRACKENBURY said he had been a direct representative for fifteen years. The facts about the council were so usually perverted that it was gratifying to find them so accurately set out. Restoration was frequent after one or two years, and after five years it was common. The council had to be constituted to perform three functions: the regulation of medical education (by far the most important), the publication of the pharmacopœia, and the keeping of a register of persons whom the public could safely consult. These functions were diverse and it was not easy to form a body to deal with them all. It must either contain people more competent for one or two of its functions than for others, or else divide itself into three sections—which was not allowed by law. He thought the system had in practice worked with efficiency and with justice. He would prefer a rather smaller body with a much higher proportion of direct representatives. He would group educational bodies for representation; he found these members apt to take a narrow-angled view. The public were at a grave disadvantage in not knowing what took place during the private debates on the evidence; every point that could occur to any one of 39 intelligent persons was brought forward and weighed; and the legal assessor took an important part in those discussions. To ask for publicity about that period was like asking for details of a jury's deliberation. The council was the jury, although the functions of judge and jury were not separated. The council was a worthy and very merciful tribunal. If anything, the council paid too much regard to the doctor and too little to the public interest. He did not agree at all that the medical mind was inadequate in estimating evidence. He had very often wished that witnesses could be compelled and sworn—if, indeed, the oath made any difference. The defence societies were far more often concerned in defence than in complaint. It was almost impossible before the General Medical Council to prove a case of canvassing; it was extraordinarily difficult to bring up witnesses. He had no doubt which in the mind of the public was the more popular offence: adultery or drunkenness.

It was drunkenness. Very many people regarded drunkenness as an accompaniment of particular cleverness. The distinction between the existence and the abuse of professional relationship had never previously occurred to him and he did not quite understand it. Such a distinction had never been pleaded before the council; everyone assumed that if professional relationship had existed it had been abused.

Dr. H. LETHEBY TIDY declared that the whole object of the act was to enable the public to distinguish qualified from unqualified practitioners. The council was there to keep the register pure and not to punish the doctor, and this was never forgotten. He did not think costs should be awarded. Judges did not normally have intimate knowledge of the crimes they tried. Adultery was the most serious crime a doctor could commit. He was betraying the faith of a client, and that was the depth of infamy. It was not excused by a doctor giving up practice and leaving the neighbourhood. When the Law Society had had a little more experience they would see how imperfect their act was. There were advantages in a small disciplinary committee. He did not consider that medical education would necessarily be improved if drawn up by direct representatives. Women would be welcomed on the council—as on the bench.

Mr. DOUGLAS BARTLEY (the Legal Assessor) emphasised again that the General Medical Council did not try a case, but were there merely to inquire whether a doctor, according to the views of the profession itself, had been guilty of infamous conduct. The question usually resolved itself into one of fact. The council was a jury. To suggest that the 39 members of the council were less able to make up their minds than the 8 jurymen in a county court was ludicrous. Nobody else could be better judges of whether there had been breach of professional ethics. He did not favour a right of appeal. He agreed that sub pœna would be a great advantage, but did not think it would be an advantage to swear the witness. It was no more difficult to discover who was speaking the truth without an oath. He was not happy at the idea of giving costs. The gift of costs had not diminished speculative actions in any court. To give reasons for the council's decision would be a perfectly fatal error. Every case was entirely different.

Mr. BARRY O'BRIEN (solicitor) declared that, as a lawyer, he thought the speaker had made out his case and had only overloaded it. The primary defect of the council was its cumbersomeness. He could not see how 39 people could ever satisfactorily administer justice. He did not know whether the judgment was a majority or a unanimous one. He would not care to be convicted by a majority of 1. Drunkenness was not looked upon seriously in this country, because every man had suffered from it, but for some reason there was a very different feeling about adultery. He had been appalled to hear a lawyer say that the giving of reasons for a decision was of no moment. In a court of law the prisoner and public heard an able summing-up by a judge. In a court-martial a lawyer properly summed up the case at the end.

Sir WILLIAM WILLCOX described the function of the General Medical Council as the maintenance of a high standard of medical practice. Its relationship to the Privy Council was a great protection to the profession.

Mr. KITCHIN, in reply, said it was most important that justice should *appear* to be done. There was extraordinary unanimity among the pressmen attending the council's meetings; they all came away from each session gritting their teeth at some apparent injustice. He did not ask for a statement of the minds of the jury but for the sort of reasoned statement a judge sitting alone would make. The fact that drunkenness was a popular offence was no reason for treating it leniently in doctors. Dr. Tidy's frankly expressed attitude towards adultery must make it difficult for him to judge each case on its merits. There should, of course, be discretion as to costs. He had always thought the oath put the brake on perjury a little.

MEDICAL SOCIETY OF LONDON

AT a meeting of this society on Feb. 27, with Dr. C. E. LAKIN, the president, in the chair, a discussion on the principles underlying the

Modern Treatment of Fractures in the Extremities

was opened by Mr. W. ROWLEY BRISTOW. Many members would, he said, remember the days when fractures had been treated purely as an injury of bone. In 1895 Lucas-Championnière had concentrated attention on the function and treatment of the soft parts, and some years later, under Arbuthnot Lane in England and other authorities abroad, fractures had been treated by open operation for reduction and fixation. Both these methods had given excellent results in the hands of the pioneers, but their followers had not been so successful. In the late war Sir Robert Jones had insisted on segregation and unity of control, a method which, forgotten for an interval, was now being recaptured.

An outstanding feature of modern treatment was the recognition that a fracture was a dual injury. Böhler, by his splendid clinic organisation, had given a great stimulus to modern treatment and done everything possible to encourage treatment of the soft parts and restoration of function. The injury of the bone and that of the adjacent tissues should be treated side by side. In the second stage of fixation, and in the third stage of protection until union had consolidated, treatment of the soft parts had considerable and in many cases paramount importance. Bony union was not firm until intramedullary callus had formed between the ends. To understand malunion it was necessary to appreciate the need for consolidation. The method of reduction would depend partly on how the fracture had been produced. Skeletal traction was necessary for the reduction of some fractures, such as those of the tarsal bones of the foot and overlap or comminuted fractures in the lower third of the tibia and fibula. In others open reduction was essential—e.g., fracture of the external condyle of the humerus in a child—otherwise the parts might fail to unite and the ulnar nerve might be involved years later. Certain fractures, such as comminuted fracture of the head of the humerus, could not be reduced; there was here no need to splint the bone, and treatment should be concentrated on the soft parts. The interpretation of skiagrams, particularly of the shoulder, must be backed up by clinical evidence and observation. There was great danger in generalising from a child to an adult.

In treating the ordinary Colles fracture it was absolutely necessary, having reduced the open deformity, to hold the fracture until it was united

and to protect it from strain until it was consolidated—to go through the whole gamut of treatment of bone. In treating the soft parts a dorsal plaster slab was applied, running from the upper part of the forearm to below the head of the metacarpal bone, and the patient was encouraged to make every possible movement of the hand, elbow and shoulder in pronation and supination, but was prevented from moving the wrist. This method was often considered novel, but had been exactly described in a textbook by Helferich published in 1899. Shortening of the ulna might throw the radio-ulnar joint out of alignment and practically abolish pronation and supination. Baldwin's operation of resecting a piece of the ulna would restore the joint.

The neck of the femur and the carpal scaphoid had no muscular attachments and were difficult to fix; the treatment was therefore treatment of bone and prolonged fixation by splintage. The scaphoid might have to be fixed for nine months in order to get union. Fixation should, however, not interfere with the carpometacarpal movement, or stiffness might result. Mr. Bristow showed a film illustrating functional results of treatment, sometimes after very short periods. In conclusion, he said that treatment might change but the principles upon which it was founded were timeless and immutable. He pleaded for segregation and unity of control in the London teaching hospitals, and for better instruction of the student by demonstration on the mass of material which could only be found at a large hospital.

Mr. T. P. McMURRAY said that the basic principles of treatment of a fracture were the provision of sound bony union in the shortest possible time with the fewest possible complications. Technique was suggested by the mechanical ingenuity of each surgeon and should not follow rigid principles. Time could usually be minimised by holding the fracture and freeing it from strain. In children, or in certain parts of the body in adults—e.g., the clavicle and ribs—movement of the fracture did not matter. In the scaphoid or neck of the femur it would prevent union. The worst complication was probably stiffness of joints from wrong fixation.

A normal joint which was not the site of arthritis could be held in a normal position indefinitely and rigidity would not result. A man who had been fixed in a normal sitting position in a barrel for five months had emerged without stiffness. The cock-up hand-splint used in the war had produced appalling rigidity at the metacarpo-phalangeal joints, but when the splint had been bent so that the joints of the hand were slightly flexed, no stiffness had resulted. A fracture that gave much trouble was the comparatively rare transverse fracture of the anatomical or surgical neck of the humerus with complete dislocation of the upper fragment. The loose fragment lay in the subglenoid cavity or subcoracoid region and could not be retracted without much damage. The fracture could be reduced easily if the arm were pulled straight above the head by constant steady traction: the fragment would slip back into position spontaneously. Non-union of a fracture of the humerus was due largely to the use of traction. These fractures did not need artificial traction: the weight of the forearm provided all that was necessary.

Three types of fracture of the elbow-joint called for operation. Fractures of the external condyle were always twisted by the pull of the common extensors of the forearm. Fractures of the internal epicondyle could be reduced by manipulation, but this would cause great trauma. A good result could be achieved merely by extracting the fragment from between the two bones, even if it were removed altogether. In fracture of the olecranon, even if the fragments could be supported, the joint should be opened. Supracondylar fractures round the elbow-joint should be treated in the ordinary way by reduction, fixation and flexion, but the other three injuries could not be so treated, because the fragments could not be brought into position.

Fracture of the shaft of the ulna with dislocation of the head of the radius was very difficult to induce, because of the difficulty of keeping the head of the radius back. Sometimes it could be retained in position by keeping the elbow in flexion, but sometimes it could not, and there might be no alternative to removing it. The idea that once a Colles fracture was reduced it could be held with stamp-edging had been abandoned: unless it were fixed there would be redisplacement in 25 per cent. of the cases. Injuries of the semilunar bone were nearly always dislocations. The fragment should be replaced in the normal position, but if the fracture were two or three weeks old the correct treatment was to remove the semilunar bone if it could not be replaced by manipulation. This would avert the risk of the open operation and permanent stiffness through arthritis.

In a certain proportion of fractures of the neck of the femur, surgery should not be used and lack of union should not be considered a disgrace: the patient's health and even life were endangered by immobilisation. Pinning of the neck of the femur was incomparable if it succeeded, but it failed in about 20 per cent. of cases. The surgeon should learn to recognise its contra-indications and then perform an osteotomy to transfer the shaft of the femur under the head. This operation had many disadvantages and the patient was in plaster for about 3½ months, but the result was usually firm and good.

Fractures of the trochanteric region generally united, but their tragedy was that if they were not fixed in the proper position they united with great eversion, which must be treated by osteotomy. They could be treated in extension or plaster without internal fixation if the first position were good. Fractures into the knee-joint were difficult, the worst being fractures of the condyles of the tuberosities of the tibia. In treating the abduction fracture there was no rule whether it should be reduced or left alone. Reduction was usually very difficult, and a better result would usually be achieved, unless the deformity were severe, by leaving fragments as they were—by concentrating on movement and leaving the joint slightly out of alignment. Lane's advocacy of reduction had been somewhat excessive, and the present tendency was to return to the other extreme of Lucas-Championnière and to aim at perfect movement in the adjacent joints. Fractures could not, however, be left in gross malalignment, for neither patients nor hospitals would submit to it. A middle way could perhaps be found by following the fundamental principle of reduction and fixation until union was complete. There was no definite time-limit for union, and clinical observation would give more help than radiography. Thomas's test of tenderness on pressure held good. When the union was firm, both physically and radiologically, there was no reason why the alignment should not be maintained.

Mr. J. E. H. ROBERTS remarked that shortening, in certain bones, was not important; angulation caused severe dysfunction, but rotation was the worst enemy of all. He had been obliged to perform many

osteotomies after the war on patients whose forearms had been put up in pronation or semipronation and who had not been able to supinate them afterwards: the surgeons had not obeyed the old maxim that the patient should be able to spit into the palm of his hand. Good results could only be obtained by individual treatment. Every patient who had an operation on the chest and whose arm was kept at his side suffered from a stiff joint: movements must be commenced from the day after the operation.

Mr. N. ST. J. G. DUDLEY BUXTON asked why Mr. Bristow allowed patients suffering from fracture of the neck of the femur to walk without protection, in apparent breach of his own principle. Difficulty occurred in fracture of the middle or upper third of the ulna, which was generally oblique and associated with a dislocation forward of the head of the radius. This injury was commonest in adolescents, in whom removal of the head of the radius was bound to be disabling. The ulna should be kept straight and then the radius could be pushed back into position and held there. When two bones were injured in a limb, the more important bone should be treated and the other left to look after itself. In fractures into a joint there was great temptation to operate, because the skiagram showed severe distortion. Operation should be avoided unless realignment could be secured without much trauma; otherwise, nature aided by physiotherapy was more likely to produce good results.

Mr. ALEXANDER CRUICKSHANK observed that fractures of the os calcis were neglected by most textbooks. The majority were comminuted and involved more than one joint. It was exceedingly difficult to decide whether long fixation or early movement was the right treatment.

Mr. H. E. GRIFFITHS said that the injuries of sailors had changed much in the last century. Non-union was extraordinarily rare, and sailors did not seem to undergo those fractures which usually failed to unite. One of the chief difficulties was delay in treatment. If the object of treatment were chiefly to return the man as quickly as possible to his work, then reduction might have to be dispensed with. The surgeon should decide what range of movement was necessary to the man's occupation and make its achievement his guiding consideration.

Mr. C. HOPE CARLTON doubted whether there were any first principles of fracture treatment, and declared that much of the most successful treatment was empirical. Surgeons were handicapped by the tyranny of the radiogram. They had always at the back of their minds the possibility that after a few months they would find themselves in the witness-box admitting that the injuries shown in the radiogram would be expected to cause the disability which the patient alleged. They were therefore compelled to try for the best anatomical alignment regardless of function. Fixation in dorsiflexion was the wrong treatment for Colles fractures. He had never yet seen a fracture of the femur below the lesser trochanter treated successfully in a heavy man of sixty. The upper fragment could not be moved without flexion and abduction, which caused great pain. Böhler's method for fractures of the os calcis gave good and bad results in apparently similar cases, and he thought that the principles depended on instinct and experience rather than on mathematics.

Mr. A. DICKSON WRIGHT said he found reduction much easier if he fixed the small part and moved the patient.

Mr. BRISTOW, in reply, said that the impaction which was always present in a fracture of the femoral neck made protection unnecessary. In a child the head of the radius must be replaced by open operation; its removal was a criminal procedure. When Böhler's method failed he treated fracture of the os calcis by subastragaloid arthrodesis, except in patients who developed for themselves a rigid subastragaloid joint. Treatment was not entirely empirical but was based upon mechanism.

NORTH WESTERN TUBERCULOSIS SOCIETY

ON Jan. 26 at the Manchester tuberculosis offices Dr. R. R. TRAIL addressed this society on the

Limitations of Artificial Pneumothorax Treatment

As long ago as 1919, he said, Bardswell and Thomson had proved that something further than sanatorium treatment was necessary if we were to reduce the grave mortality from pulmonary tuberculosis which, under all forms of institutional treatment, leaves the average patient with at best a 50 per cent. chance of relapse within three years. That was before the enormous possibilities and great accomplishments of treatment by pneumothorax were realised. Bentley's monograph of 1936 on the experience of the L.C.C. had demonstrated a plus of 19 per cent. in the survival of institutional cases treated by artificial pneumothorax. But in considering the end-results of treatment four facts must be kept in mind: (1) The results referred to those willing and fortunate enough to be treated in a sanatorium. (2) The patient with artificial pneumothorax has a definite advantage over his fellow patient because of continued supervision. (3) Patients considered suitable for artificial pneumothorax are in a lower grade for prognosis than the average patient with evidently similar extent of disease. (4) All treatment is ultimately dependent on the prime factor of early diagnosis which does not seem to improve. Recent investigations had shown that fully 60 per cent. of artificial-pneumothorax cases so far treated had bilateral disease at the time of induction; we knew now that unilateral disease gives a far better end-result even with partial collapse than does complete collapse in bilateral cases. He deprecated the maintenance of pneumothorax when resistance was being undermined and cavitation was recurring; as a result our surgical wards are being asked to deal with many cases already beyond hope of a good surgical result. Whatever the successes of phrenic operations and cauterisation of adhesions, he was assured that even better results had been attained by surgery at an earlier stage. The dictum that pneumothorax must precede thoracoplasty was not of universal application; in three categories of patients surgery at the date of diagnosis might be better than any minor method of treatment: (1) Those with unilateral disease of fibrocaseous type, with or without cavitation, but with definite displacement of heart and mediastinum. (2) Cases of upper-lobe pneumonic phthisis which have reached the stage of marked involvement of the interlobar pleura and subclavicular cavitation. (3) Those with cavitation in the middle or lower zones of the chest, particularly if the cavities are in the inner third of the lung field.

REVIEWS AND NOTICES OF BOOKS

Avian Tuberculosis Infections

By WILLIAM H. FELDMAN, D.V.M., M.S., associate professor of comparative pathology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota. London: Baillière, Tindall and Cox. 1938. Pp. 483. 31*s.* 6*d.*

UNDER the great personal influence of Robert Koch the belief was held for several years that the bovine tubercle bacillus was virtually non-pathogenic for human beings. It was not till after the investigations of the Royal Commission on Tuberculosis in this country and of various workers in the United States that this belief had to be abandoned. The similar belief that the avian tubercle bacillus is non-pathogenic for man has not suffered a similar fate. Dr. Feldman, who has made a careful study of the literature, can find only 13 recorded cases of tuberculosis in which there is a reasonably high probability that the avian bacillus was responsible, and in this country Dr. Stanley Griffith with his vast experience has never met with this organism in a single case of tuberculosis. On the other hand, the avian bacillus is of great importance in infections of birds, and to a less extent of certain mammals such as pigs and cattle. In fowls tuberculosis due to this organism is widespread throughout the world, and in the United States it seems that about 5 per cent. of chickens are infected. In pigs the annual loss from avian tuberculosis in the United States is estimated at about $2,000,000. In cattle the avian bacillus is uncommon and gives rise to only a retrogressive type of disease, but owing to the confusion it may cause in the tuberculin test it cannot be neglected.

The importance of the avian tubercle bacillus is therefore economic as well as scientific and there is need for a comprehensive study such as this of the organism and the disease which it causes under natural and experimental conditions. In a book dealing with so many different aspects of a problem it is difficult to avoid a certain amount of repetition, but in a future edition some overlapping might be prevented by dealing separately with the natural and the experimental disease in different animals. The identification of the mammalian types of tubercle bacilli should either be described fully or not at all; the present account is unsatisfactory. These, however, are small faults, and Dr. Feldman's compilation will prove of value to workers in the office, the laboratory and the field.

Insulin: Its Chemistry and Physiology

By HANS F. JENSEN, Ph.D., associate, laboratory for endocrine research, Johns Hopkins University, Baltimore. London: Humphrey Milford, Oxford University Press. 1938. Pp. 252. 8*s.* 6*d.*

THIS book would be worth buying for its references alone, for it gives a fully indexed list of 1300 original papers, including most of the important work relating to insulin and its physiology which had appeared up to the beginning of 1938. There are, however, many other features to recommend it. The style is unassuming and convincing, and the author keeps to the point and marshals his facts with enviable ease. More of his personal opinions creep through in the earlier part which deals with the history, preparation, properties and standardisation of insulin than in the later part which is more concerned with physiology, but the physiology of insulin is a subject on which personal opinions have perhaps been expressed too freely elsewhere, and in which workers too often seem to read each other's papers unsympathetically. Dr. Jensen has assumed the heavy task of arranging the mass of physiological research in some sort of order and without prejudice. There is a chapter on substitutes for insulin and another on methods of administration. The latter is severely objective, in common with the rest of the book, and gives among other information the scientific background of the use of protamine insulin and zinc-protamine insulin. The clinical aspects of insulin are referred to only briefly as being outside the scope of the book, but those who are interested in diabetes from the purely clinical point of view will nevertheless find this review of the greatest interest and value.

Textbook of Medicine

(4th ed.) By Various Authors. Edited by J. J. CONYBEARE, M.C., D.M. Oxfd, F.R.C.P., physician to Guy's Hospital, London. Edinburgh: E. and S. Livingstone. 1939. Pp. 1112. 21*s.*

THE principal alteration in this edition is the addition of a hundred pages on the psychoneuroses and psychoses by Dr. Desmond Curran and Dr. Erich Guttmann. This has made the book a little more bulky but no dearer. Certain "new" diseases have been added elsewhere and the whole text has been generally revised. The book remains a middle-weight among textbooks of medicine, and a very serviceable work.

Handbook of Midwifery

(10th ed.) By Sir COMYNS BERKELEY, M.D. Camb., F.R.C.P., F.R.C.S., F.R.C.O.G., consulting obstetric and gynæcological surgeon to the Middlesex Hospital, London. London: Cassell and Co. 1938. Pp. 633. 8*s.*

SINCE it was first published in 1906 this little book has reached fifty-seven thousand, and no more need be said of its utility. For the pupil midwife the text is adequate, and for the medical student very nearly so. The book can be quickly read, and forms a sound introduction to the subject. The text has been thoroughly revised and a few new illustrations added, and the sections concerned with the principles of domestic and personal hygiene, the management of the premature baby, and artificial feeding are now particularly satisfactory.

Methods of Tissue Culture

By RAYMOND C. PARKER, Ph.D., associate in experimental surgery, Rockefeller Institute for Medical Research, New York. London: Hamish Hamilton Medical Books. 1938. Pp. 292. 24*s.*

IN this book Dr. Parker outlines the procedures used in Carrel's laboratory at the Rockefeller Institute. He discusses briefly the history and general uses of tissue culture and describes how a tissue-culture laboratory should be planned, the equipment it should contain, and the various routines, such as cleaning, sterilising, pH determination and the preparation of media, which the method involves. He then deals with the actual preparation of various types of culture and the different ways of measuring growth in vitro, the histological and photographic techniques involved, and finally with the applications of tissue culture to biology and medicine.

The book is unsuitable as a guide for beginners, for the methods and equipment recommended are too costly and elaborate. Tissue culture can satisfactorily be applied to many problems with much cheaper apparatus and simpler procedures than these. On

the other hand, this will be a valuable work of reference for experienced workers, for it contains a detailed account of many important special techniques which have not been published before. The descriptions of complicated methods are made easy to follow by their clear and logical style and some excellent photographs and line drawings.

Textbook of General Bacteriology

(12th ed.) By EDWIN O. JORDAN, Ph.D., late Andrew McLeish professor of bacteriology in the University of Chicago. Revised by WILLIAM BURROWS, Ph.D., assistant professor of bacteriology in the University. London and Philadelphia: W. B. Saunders Company. 1938. Pp. 808. 25*s*.

THOUGH suited to the needs of ordinary medical students and students of public health this well-known American textbook is at the same time one of the best introductions to bacteriology as a branch of general science. Since the last edition appeared its distinguished author, Dr. Jordan, has died, but in the present revision Dr. Burrows has succeeded in bringing the book up to date without interfering with its characteristic qualities.

Tabes Dorsalis

Klinische, erb- und konstitutions-pathologische sowie sozialmedizinische Untersuchungen. By Prof. Dr. F. CURTIUS, Dr. H. SCHLOTTER and Dr. EDM. SCHOLTZ. Leipzig: Georg Thieme. 1938. Pp. 275. R.M.14.

THIS monograph is one of a series on the social aspects of medical subjects, sponsored by the German ministry of labour. The authors have studied 101 cases of tabes dorsalis in war pensioners, and have amassed a truly remarkable amount of statistical and other details. Age, heredity, constitution, environment, family history, race and the effects of war service have been diligently recorded and each individual symptom and sign has been closely examined as to its statistical significance and its possible relationship to any or all of these factors. Comparison has been made with the findings of other authors. Where possible interesting clinical points are illustrated by photographs, and most of the statistical facts are clearly set out in tables. Those who will face the task of separating the irrelevant from the relevant in this mass of information should be well repaid.

Positioning in Radiography

By K. C. CLARK, F.S.R., radiographer-in-charge, Ilford radiographic, technical and demonstration department. London: Ilford Ltd., William Heinemann (Medical Books). 1939. Pp. 482. £3 3*s*.

THIS large book, which is intended for students of radiography as well as for practising radiographers, is made up of 32 sections, each dealing with one part of the skeleton, one organ, or one special method of examination such as pelvimetry, tomography or kymography. The method of presentation is to show photographs of a model placed in the appropriate position together with the actual radiograms obtained. Where the projection is somewhat complicated the part is shown in section in a line drawing to explain the reason for using the particular technique. Alternative methods of examination are included, and the less experienced worker will appreciate the suggestions given concerning exposure factors and the difficulties that are encountered in certain abnormal conditions.

It seems a pity that the author has omitted the innovators' names that are customarily applied to certain projections, though there is some justification for preferring a more informative description. The statement that the preparation of a patient for an opaque enema calls for "frequent high colon washouts" is not one that should appear without some reference to the patient's condition, if indeed it should appear at all. Apart from these small points, however, there is little to criticise. In the preparation of the 1300 illustrations the author has been able to call upon the resources of Ilford Ltd., and this happy collaboration has resulted in a book that will be valuable in every department where radiography is undertaken.

Diseases of the Nose, Throat, and Ear

By W. WALLACE MORRISON, M.D., clinical professor, department of otolaryngology, New York Polyclinic Hospital. London and Philadelphia: W. B. Saunders Company. 1938. Pp. 675. 25*s*.

Dr. Wallace Morrison has had a long experience of teaching postgraduates, but he has written this textbook for both the undergraduate student and the general practitioner. It admirably fulfils its purpose. In each section the surgical anatomy and physiology of the parts concerned are outlined; the common diseases are then dealt with fully and the rarer conditions more briefly. Similarly, only the more simple operations are described at length. The various stages of an operation are indicated quickly and clearly by means of diagrammatic drawings with a short descriptive text. The book is illustrated throughout by pen-and-ink sketches drawn by the author, which are mainly amplified versions of the chalk drawings he uses in his lectures. These are satisfactory as diagrams but are too rough to give the student a good idea of the appearance, for example, of disease of the larynx or fauces. The work is thorough and accurate, though it repeats the unimportant but common error of giving the focal length of the concave head-mirror as 14 in., whereas it is really 6–7 in. The advice given on treatment is sound, and the student and practitioner will find Dr. Wallace Morrison a straightforward and reliable guide.

Chemical Analysis of Foods and Food Products

By M. B. JACOBS, Ph.D., chemist in the bureau of food and drugs, department of health, City of New York. London: Macmillan and Co. 1938. Pp. 537. 25*s*.

THE author of this book is one of the more modern food analysts who is prepared to avail himself of the help which all branches of chemistry can offer to those who practise this important but in the past not very scientific branch of analytical chemistry. He has produced a readable and useful manual. The first five chapters deal with general and physical methods of examination, colouring matters, and preservatives and metals in foods, and the next ten with examination of special groups of foods. The author then describes the determination of vitamins and various inorganic determinations, giving many very modern methods, such as the determination of sodium by the zinc and magnesium-uranyl methods. Apart from a few slips and occasional sentences which need recasting the book is well written. The author provides a useful bibliography at the end of each chapter and quotes copiously from publications issued inside and outside the United States. Although the references to legal enactments necessarily apply mainly to those of his own country, the general information, including tables of analyses of many products, will be valuable to all food analysts.

THE LANCET

LONDON: SATURDAY, MARCH 4, 1939

PROPHYLAXIS IN WAR AND PEACE

THE Medical Research Council and their predecessors, the Medical Research Committee, have now been established for a quarter of a century. They recall, in their report for 1937–38, the fact that in their first five years of life most of the efforts of their staff had to be directed to the solution of problems of war, presented mainly through the medical departments of the War Office and the Admiralty. Indeed the early green-books on such subjects as surgical shock and hæmorrhage and wound infections observed under war conditions, and on rickets in Vienna during the post-war period, are now prized as classic works of reference. After a period during which the demands for help from Government departments diminished, and the council were able to develop their own plans of medical investigation, official requests for inquiries have again in recent years become more numerous and exacting, and this type of work, of which examples are given on another page, has loomed larger in their programme, necessitating the permanent appointment of expert members of staff to cope with it. During the past year the work has included various services of a technical nature undertaken at the request of the Committee of Imperial Defence and designed to make the resources of science available for the defence of the civil population. Some of these activities are not detailed. One of the plans outlined, however, will greatly relieve the anxiety felt by many of our profession lest no precautionary scheme against epidemics had been included among the preparations for evacuation of large sections of the population in an emergency. It is now announced that last year the Medical Research Council were entrusted with the organisation of an emergency public-health laboratory service to assist, in the event of war, in the protection of the civil population against the spread of epidemic infections under the abnormal conditions which might prevail. The possibilities that had to be envisaged included large movements of population, especially as the result of evacuation from big cities, and dislocation of ordinary services of various kinds. At the best it would take time to train adults and children to behave so as not to endanger their neighbours in such circumtances, and expert guidance will be essential if disasters are to be avoided.

In these circumstances there appeared to be need of a much more widely spread laboratory service for bacteriological diagnostic work than at present exists. A scheme was accordingly worked out for an emergency service which would augment the facilities already available under the normal public-health administration. It was based on the utilisation of bacteriologists and assistant personnel usually engaged in research work or postgraduate teaching, and of those in hospital laboratories who could be spared from their ordinary duties. With the willing coöperation of the various authorities concerned the scheme was elaborated in detail, and arrangements were made for giving it effect without delay in the event of an emergency. It is satisfactory to learn that the measures had been completed before the international crisis in September in districts where such provision seemed to be most required, and that they have since been extended to the remaining regions. There is thus at least one section of the medical profession whose members know that their services in an emergency will be used to good advantage. Such essential measures as the provision of a safe water-supply, the proper disposal of sewage, prophylaxis in overcrowded areas against enteric diseases, the identification of carriers, would certainly tax the resources of the public-health departments of the districts receiving refugees. Even where a bacteriological service is already established, the knowledge that it will be supplemented at need by highly skilled workers will be welcomed by all who have realised the havoc that disease could cause in a community suddenly transplanted from highly civilised conditions of life to primitive ones. The good offices of the Medical Research Council have also been enlisted in the coördination of certain medical supplies to meet the requirements of the defence services and of the civil population in the event of war. Action taken last year related particularly to substances, such as tetanus antitoxin, which might be required in quantities out of all proportion to the productive capacity of the manufacturing laboratories in peace-time. Estimates of the probable demand having been made, steps were taken to accumulate the necessary reserves for use at the outset, and also to ensure that means existed for rapidly increasing production. These arrangements had also been completed, in respect of the most important substances, before September last.

In view of these concrete services and the evidence throughout this and previous reports that the Medical Research Council are not merely an academic body promoting research into disease processes without concern for practical issues, their plea for the coöperation of the public in the application of new knowledge should receive earnest attention. The swift spread of the use of any curative drug—for example the new chemotherapeutic agents—is contrasted with the delay in the application of discoveries in preventive medicine. The council suggest that a better method of informing and educating the public has become imperative and that there is great need for some authoritative body to transmit the necessary information. Surely this is a duty which could properly be undertaken by the local medical officer of health and his staff; immunisation against diphtheria, for example, is gaining ground in certain districts where facilities are not only provided but are well advertised and the coöperation

of practitioners is enlisted. The Ministry of Health has urged local authorities to adopt prophylactic measures and would doubtless support any scheme designed to interest the public in their widespread use. Unfortunately, as the council point out, immunisation will not be completely effective in eradicating diphtheria until it is applied to all susceptible children in any community; but the example, quoted in the report,[1] of the town of Hamilton in Ontario, with a population of 175,000, where not a single case of diphtheria has been reported during the past five years, should stimulate progressive local authorities in this country to a campaign of persuasion. The unchanged dietary habits of the British people, in spite of the accumulated evidence of the nutritive value of the protective foods, are deplored by the council as another example of the failure to interest the public in preventive medicine. Admittedly the application of modern teaching on this subject is depressingly slow, but conservatism does not necessarily spell ignorance. The relative cheapness of carbohydrates and the child's taste for sweets may influence the proportion of the various foodstuffs consumed in a household whose head knows well enough that bread and biscuits and sugar are not now favoured by experts as substitutes for milk, butter, eggs or fruit. There is truth, however, in the contention that preventive medicine lacks the dramatic quality possessed by cure of disease and that continued effort to keep the public informed of the ways in which they can take advantage of new knowledge gained in this field is a necessary step towards the improvement in the general health of the community and the elimination of disease. Not only public-health authorities but family doctors can help in this educational campaign. The first step is to rekindle their own enthusiasm and the best way to do so is by study of this dynamic report.

A PHARMACOLOGIST PROTESTS

"AN unfortunate situation in the field of bacterial chemotherapy" is the title of a strong protest by E. K. MARSHALL[2] against the indiscriminate therapeutic use of new sulphonamide compounds before their experimental study is complete. Dr. MARSHALL and his colleagues were the first to carry out a thorough pharmacological study of sulphanilamide itself, in the sense of determining its rate of absorption, its distribution in the body, and its rate of excretion; hence no-one is better entitled to administer this reproof, if reproof be deserved. He complains in the first place that tests of curative action have been performed with inadequate numbers of mice, and that investigators performing them make "no attempt to evaluate the significance of their figures or to analyse and test their meaning by even an elementary statistical technic." Another direction in which preliminary experimental work has been inadequate has been the study of toxicity; three reasons are suggested for the undoubted fact that toxic effects are more liable to be produced in the sick human being than in the normal animal, and it is argued that in view of this observation the study of toxicity in animals should be all the more thorough.

These criticisms are made without specific reference to any sulphonamide compound; indeed the only one mentioned is "2-sulfanilamidopyridine," and this for a somewhat different reason—namely, that "as yet no description of the substance has been published. The proof of its chemical structure, analyses for purity and chemical properties are withheld." It is appropriate here to refer to another recent publication by MARSHALL and others[3] describing the results of a toxicological study of this drug. Although it has been said to have about "one fourth the toxicity of sulphanilamide," this statement is based only on the results of administering a suspension by the mouth, with no proof of complete absorption. MARSHALL and his colleagues, by determining the blood concentration after various doses of such a suspension by the mouth, obtained results from which it is clear that absorption is far from complete. On the other hand, when they prepared the sodium salt of this compound, which is much more soluble, its administration produced blood concentrations to attain which with 2-sulphanilyl-amidopyridine itself a dose as much as eight or sixteen times greater was necessary. Judged by results with the sodium salt, this drug is not less but more toxic than sulphanilamide. They conclude by recommending that "until more is known about this drug, it should not be used in conditions where sulfanilamide has been shown to be effective." This is a transatlantic verdict on the most successful new sulphonamide compound produced in this country, and something of the same sort might be said of Uleron, which occupies a similar position and has had a similar career in Germany. It is therefore of interest in this connexion that BLAICH[4] of Münster has made some new and disquieting observations on the behaviour of this drug in the body. They are briefly that its excretion in the urine continues for five days after administration has ceased, and that the drug accumulates in the liver and spleen, with demonstrable damage to the former. Uleron has been used on an enormous scale, and occasionally produces toxic effects of several kinds which are not known to be caused by other sulphonamide compounds; it is astonishing that this important clue to the nature of its dangers should only now have come to light.

It must be admitted that the general criticism made by MARSHALL has considerable force. Whatever the therapeutic results attained, it is unsatisfactory that a compound of this kind should be widely used before some of its elementary properties are understood—before, for example, it is known how much of a given dose will be absorbed. Sulphanilamide is still the only one of these drugs for which full pharmacological data are available, and it is very desirable that the necessary patient and careful studies which alone can furnish such

1. And mentioned on p. 490 of our last issue.
2. Marshall, E. K., jun., *J. Amer. med. Ass.* Jan. 29, 1939, p. 352.
3. Marshall, Bratton, A. C., and Litchfield, J. T., jun., *Science*, Dec. 23, 1938, p. 597.
4. Blaich, W., *Münch. med. Wschr.* Feb. 3, 1939, p. 171.

data should be pursued with other compounds. MARSHALL'S concluding plea that the place and value of pharmacology in medicine should be more fully recognised is well supported by his evidence of the neglect of this subject in the bewildering developments of the past few years.

A PROGESTATIONAL EFFECT BY MOUTH

THE capacity to evoke progestational changes in the uterus was originally thought to be specific to the hormone of the corpus luteum, progesterone, a substance which even now is available only in limited quantity and which is virtually inactive by mouth. Later, however, it was found that certain methyl and ethyl derivatives of androgens, notably methyl testosterone, also had a progesterone-like activity, though this was only about one-twentieth that of progesterone itself. This result disproved the supposed absolute specificity of progesterone, but at the same time, since methyl testosterone differs from progesterone only in the absence of the short side-chain, it emphasised the relative specificity of progesterone-like activity. Moreover, any practical use of methyl testosterone based on this discovery was discouraged by the fact that the compound is a very powerful androgen.

Last year an important advance was made by INHOFFEN and HOHLWEG,[1] who prepared the 17-ethinyl derivative of testosterone and produced a compound differing from progesterone only in the absence of the elements of water from the short side-chain, and in the presence of an extra oxygen atom in the 17 position. This compound, variously known as ethinyl testosterone, pregneninolone, and anhydrohydroxyprogesterone, was found by INHOFFEN and HOHLWEG to have progesterone-like activity one-fifth to one-tenth as great as that of progesterone itself. Its most interesting and important property, however, was that, as tested on the rabbit, it retained its full progesterone-like activity when given by mouth. Since this compound possesses virtually no androgenic activity the introduction of what amounts to an orally active form of progesterone promised to be an important event in endocrine therapy. Nevertheless, as pointed out in our columns last December,[2] experiments on oral activity carried out on the rabbit are not necessarily conclusive evidence as to the behaviour of the substance in other animals and particularly in man. It is encouraging therefore to know that clinical results which indicate an oral effectiveness of pregneninolone in women are now beginning to appear. Some results pointing to this conclusion have already been published by CLAUBERG and ÜSTÜN[3] and today we publish a paper by Prof. ZONDEK and Dr. ROZIN which shows that a number of effects they have been able to obtain by the injection of progesterone can also be obtained by the oral administration of pregneninolone (or, as they term it, pregneninonol). They find for instance that this compound, like progesterone, will induce hæmorrhage during the intermenstrual phase of the normal cycle; moreover, it appears that secondary amenorrhœa can be relieved by its oral administration even when no preliminary treatment with œstrogenic hormone is given.

ZONDEK and ROZIN conclude that a dose of pregneninolone given by mouth needs to be about six times as great as that of progesterone given by injection. But in view of the inconvenience of repeated subcutaneous injection for practical clinical purposes any technique that provides an alternative method must be considered favourably, and we shall watch the future developments of this work, particularly as regards substances with progesterone-like activity, with great interest.

1. Inhoffen, H. H., and Hohlweg, W., *Naturwissenschaften*, 1938, **26**, 96.
2. *Lancet*, 1938, **2**, 1308.
3. Clauberg, C., and Üstün, Z., *Zbl. Gynäk.* 1938, **62**, 1745.

MEDICAL REFUGEES

A MONTH ago we again put the case for a sympathetic attitude towards medical refugees.[1] This case needed re-statement because it appears that many doctors are showing an automatically negative reaction towards schemes for helping foreigners in this country. Such schemes may be good or bad, but where they avoid injustice to our English colleagues they should, we believe, be given every possible chance of success.

Our arguments have evoked two published criticisms—an article on Feb. 10 in the *Medical World*, the organ of the Medical Practitioners' Union, and a letter from Dr. G. H. CRISP which we printed on Feb. 18. The burden of both is that general practice is an increasingly difficult means of livelihood and that many practitioners fail to secure a decent living. In Dr. CRISP'S view competition is now so keen that any talk of scientific or humanitarian ideals is out of place; and where the workers already in the field are finding the harvest so poor it is unfair to introduce new ones in the name of charity. This is the dilemma considered last year in our columns[2] under the heading "An Overcrowded Profession?"—though at that time the chief complaint against refugees was that they congregated in overcrowded Harley Street. The essentially competitive nature of private practice is generally recognised; it is again well brought out by a correspondent in our present issue. All will admit, moreover, that good work often brings quite inadequate rewards and that a large proportion of doctors are now unable to give their children the kind of start in life they received themselves. On the other hand at a time of high taxation these conditions are not peculiar to our profession, and to the outsider it appears unreasonable to talk of gross overcrowding in medicine when this is one of the few callings in which one can be almost sure of securing some sort of work and some sort of pay. Nevertheless, even if the overcrowding is not so acute as it is sometimes considered, Dr. CRISP makes a very good point when he says that the compassionate decision to admit a refugee may be excellent in theory but wrong in practice because it is made

1. "As Others See Us." *Lancet*, Feb. 4, 1939, p. 274.
2. *Ibid*, 1938, **1**, 951, 1022, 1082.

purely at the expense of a few neighbouring practitioners with whom the refugee will compete and whose opinion has not been asked. The *Medical World*, in its not unfriendly article, puts a similar case for the group of practitioners as a whole: why should the profession be generous at the expense only of a section of its members?

"General practice has already admitted a full quota, far more than any other organised calling. There are others who have done nothing. What has the huge machine of government and municipal medicine done? We know of nothing. There are millions of inspections of school-children which might usefully be made. Why not set some aliens to this work? There are short staffs all over the country, over-work occasioned chiefly by A.R.P. legislation, and by such scandals as that of our water supplies. Is there no room for aliens here?"

The journal makes a constructive suggestion when it proposes that the Government should call a conference of the representatives of all the medical organisations and "tell that Conference what it, as a Government, is prepared to do in admitting aliens to its own services and in causing municipal bodies to admit to theirs." It would certainly be interesting to hear what advantage the Colonial and Dominion Offices are taking of the present supply of medical men and women ready to work in difficult circumstances among backward populations.

As regards private practice or other employment outside government services it may fairly be asked that doctors in all branches of the profession should judge each proposal on the facts. It may or may not be true that traditional professional ideas are outmoded, but it is certain that the nationalist theories now being imported into this country from abroad need at least as close a scrutiny as the refugees they have created; and we cannot help noticing that until recently, despite the overcrowding of the profession, little was said about cutting down the number of new entrants—who were not at that time foreigners. There is a danger too perhaps that the extent of the immigration from Germany so far permitted may be exaggerated: the grand total, including 50 Austrians who are now going through a two years' course, is, we understand, not more than about 300, and this includes a group of medical psychiatrists, whose localisation is more or less controlled by the Home Office and who are not admitted to the Medical Register, and a substantial number of laboratory and other research workers who are not allowed to practise. There are something like 55,000 doctors in Great Britain, and the new immigrants cannot at worst be held responsible for more than a small proportion of their present discontents.

Dr. CRISP at the end of his letter suggests that "our academic idealists" should find a way to secure the services of refugees without jeopardising the incomes of overworked men. But he must be aware that for many of the refugees this has in fact been achieved; and we have reason to think that it could be done for more of them if the impossibility of such schemes were not so often assumed in advance.

ANNOTATIONS

BRIEF STORY OF ST. THOMAS'S

SOME may have found the weight of antiquarian detail in Prof. Parsons's three-volume history of St. Thomas's Hospital heavy going, but no-one can make such an accusation against his delightful epitome.[1] The earliest days of St. Thomas's are still something of a mystery. In 1106 Bishop Gifford built a priory in Southwark for the Austin canons of the church of St. Mary the Virgin. In that priory a small room was set aside as an infirmarium for the sick brethren. There is little doubt that the sick poor were soon invited to share the infirmarium, and a hundred years later four canons and three canonesses were required to look after them. Thus St. Thomas's actually began before there was a St. Thomas, for the patron saint of the hospital until the reformation was not the apostle, but the English martyr. In 1212 a disastrous fire destroyed almost the entire priory, and in his appeal for rebuilding funds Bishop Peter de Rupibus says: "Behold at Southwark an ancient spital, built of old to entertain the poor, has been entirely reduced to cinders and ashes." Peter's new hospital occupied a new site, and here St. Thomas's stood for 650 years, from 1212 to 1862. Prof. Parsons traces the story of St. Thomas's up to the reformation, when Henry VIII confiscated its property and shut it down. One of its early benefactors was Sir Richard Whittington, the famous lord mayor, who added an eight-bed ward for unmarried mothers. It is said that Henry intended to refound the hospital as the Hospital of the Holy Trinity for sick and wounded soldiers, but he died too soon, and it was left to Bishop Ridley to persuade the boy king Edward VI that the needs of London's sick poor called for urgent action. So the third St. Thomas's was built, this time dedicated to the doubting apostle. In 1552 the first lay surgeons were appointed and four years later the first lay physician. The early staff were not above seeking unprofessional help, and a certain Mother Edwyn used to be called in to treat ruptures and supply trusses. Among the famous members of the early staff were the great Mead and Cheselden, of whom Pope wrote:

"I'll do what Mead and Cheselden advise
To keep these limbs and to preserve those eyes."

Mead was medical adviser to Thomas Guy, a governor of St. Thomas's, and on Mead's advice Guy built his hospital on ground belonging to St. Thomas's to harbour the incurables and lunatics whom St. Thomas's had to reject. In Guy's will however he allowed his hospital to take other than incurables; so the second of the great Borough hospitals was born. It was perhaps a pity that the two hospitals of growing south London should be side by side, and the forced removal of St. Thomas's in 1861 to make way for the new London Bridge railway station was a blessing in disguise. The rise of Guy's had been associated with a decline at St. Thomas's, but in its new home on the embankment the old hospital gained a new lease of life.

1. Scenes from the Life of St. Thomas's Hospital. By F. G. Parsons, D.Sc., F.R.C.S. Pp. 39. 1s. Obtainable from the Appeal Office, St. Thomas's Hospital, S.E.1.

Prof. Parsons ends his book with a brief tour of St. Thomas's today, and in passing College House he reminds us that the residents' photographs include notorious as well as famous characters. All old St. Thomas's men should read this little book, and there is much in it to interest those who grew up in less venerable institutions.

CARCINOGENESIS IN THE LUNG

How far the results of animal experiments on cancer can be interpreted as applying to man is a question raised again in a paper by Valade.[1] The suggestion has been made by more than one observer that the apparent increase of pulmonary cancer in recent years is attributable to the inhalation of tar-laden dust from the modern roads, and experiments on animals have been cited as supporting this. It has been shown for example that application of tar to the skin of mice is often followed by cancer of the lungs, and Argyll Campbell[2] has succeeded in demonstrating that in mice exposed to an atmosphere contaminated with road dust there is a high incidence of these tumours. Campbell suggests that his experimental results can be applied to man, or in other words that they indicate tar as the probable causative factor in cancer of the human lung; but Valade questions this. He points out that mice are especially prone to spontaneous pulmonary cancers, and that their lung tissues are susceptible to carcinogenic agents. Other animals do not necessarily have a similar susceptibility; in the rat, for instance, he found that intratracheal injections of methylcholanthrene in oil has no carcinogenic effect on the lungs. Out of 50 rats which he subjected to this procedure 14 developed connective-tissue tumours about the trachea and œsophagus, but none developed epithelial tumours of the bronchi or lungs, notwithstanding the fact that after the rats were killed crystals of methylcholanthrene could be demonstrated lying in direct contact with their lung tissues. Valade argues that if an agent so strongly carcinogenic as methylcholanthrene fails to produce pulmonary cancers in rats there must be great variations in the susceptibility of different animals, and we cannot assume that what is true for a mouse will also be true for a man.

INFANT FEEDING IN CHINA

IN an inquiry into Chinese methods of infant feeding carried out for the Henry Lester Institute at Shanghai, Platt and Gin[3] found that the great majority of the 400 babies investigated were breast-fed. Wet-nurses were employed in 36 cases, in 6 imported milk powder was used and one mother claimed that she had brought up her child on a food based on rice-starch powder, entirely without milk. The usual procedure in the breast-fed baby is to give a solution containing some cathartic substance of native manufacture immediately after birth and again a few hours later. This is intended to drive out of the body all the "heating" substances. Breast-feeding is begun on the second day. A thin sweetened paste of rice flour or starch cake (if the family can afford it) is given once or twice daily. In a few days' time if the supply of milk is adequate the child may refuse to take any additional food; but most children continue to take small amounts of rice flour. Breast-feeding when established is irregular, the frequency of feeds being determined by the baby's cry. The infant is fed less often during the night, and some 8–10 feeds are usually given in the course of twenty-four hours. There is no accepted time for the duration of a feed, which is usually continued until the baby falls asleep. Mixed feeding begins at about five months with some preparation of soft rice, and vegetable soup is added after six months. At about eight months a greater variety of soups are introduced together with egg, biscuit and oranges.

The importance of feeding the mother or wet-nurse adequately is thoroughly appreciated by the Chinese. There are recognised rules as to the special foods required, and the mother is expected to consume a definite number of eggs as well as chicken, fish, soup and so forth shortly after delivery. Even with the very poor every effort is made to fulfil the requirements of tradition. Emphasis is laid on a sufficient supply of fluid, and when milk secretion is poor drinks of many kinds are prescribed. A large number of substances have a reputation as lactagogues, such as mashed lean pork, a mixture of pork fat and cream beans, cuttle-fish in the form of soup, shrimps cooked with red wine, and cooked sea-slugs. When an infant's requirements cannot be wholly met by the mother wet-nursing is often resorted to, and in most big cities there is a subdivision of a general servants' agency which provides wet-nurses. Apart from wet-nursing the commonest way of supplementing breast-milk is to give rice flour or starch-cake powder two or three times a day. In nearly a third of the babies breast-feeding was discontinued by the end of the first year, but about half were still breast-fed during their second year, and the commonest reason given for weaning was a fresh pregnancy. From the European standpoint perhaps the most surprising finding of this inquiry was that in the 300 cases in which the indications for weaning were investigated "doctor's advice" was recorded in only one.

SODIUM BICARBONATE IN DIABETIC COMA

ALTHOUGH during the last year or two surprisingly little has been written about the treatment of diabetic coma, it would be rash to infer that the last word has been said on the subject. It is of course true that in most cases the response to insulin leaves nothing to be desired. Yet from time to time the clinician still meets with patients who give him grave anxiety. While delay in starting treatment is often responsible it is well to admit that other factors, at present unknown, may be concerned and to search widely for methods of reducing the mortality. When the treatment of a disease is revolutionised in the way that the treatment of diabetes has been revolutionised by the discovery of insulin there is always a tendency to discard prematurely the older therapeutic weapons. In the early days of insulin treatment, for instance, little attention was paid to the extreme dehydration that attends diabetic coma, and it was several years before the importance of saline was recollected. Elsewhere in this issue Dr. Kirk suggests reviving another old remedy—namely, parenteral sodium bicarbonate—which was widely used in pre-insulin days in the belief that the symptoms of coma were due to acidosis. Although nowadays it is agreed that it is ketosis rather than acidosis that is the culprit, it does seem that the energetic use of sodium bicarbonate occasionally saved life during an era when diabetic coma was almost always fatal.

The two cases related by Dr. Kirk are therefore of considerable interest. Nevertheless it is important to remember that sodium bicarbonate is a potentially dangerous drug. There is always a tendency for the

1. Valade, M. P., *Bull. Acad. Méd. Paris*, 1939, **121**, 115.
2. Campbell, J. A., *J. industr. Hyg.* 1937, **19**, 449.
3. Platt, B. S., and Gin, S. Y., *Arch. Dis. Childh.* 1938, **13**, 343.

hydrogen-ion concentration of the blood to rise when insulin begins to restore the normal oxidation of fat, and injudicious use of bicarbonate during this period is apt to exaggerate the drift towards alkalosis. And alkalosis is to be avoided, for three reasons: it can rarely be recognised clinically; it is as difficult to dispel as it is easy to provoke; and it is sometimes fatal. Another obstacle to the treatment is that solutions of bicarbonate cannot be sterilised by heat. Dr. Kirk is evidently alive to these drawbacks and the only object in underlining them is to make it clear that the indiscriminate use of sodium bicarbonate is likely to do more harm than good, especially where facilities for emergency measurements of the pH or bicarbonate content of the plasma are not at hand. But the physician who, like Dr. Kirk, can command such facilities will no doubt be encouraged to try bicarbonate in cases where response to insulin is dangerously delayed.

THE NEW SCHOOL AT NEWCASTLE

DURING their visit to Tyneside last week the King and Queen formally opened the new medical school attached to King's College, Newcastle, and made a tour of the building. The school, which has been in use since October, is planned on the pavilion system, in three main blocks joined by a corridor. The south block contains the dean's offices, the committee-room, and common-rooms for men and women students, with a café and gymnasium. Above these are the physiological chemistry laboratories and lecture theatre. The lower floors of the central block are taken up by the laboratories of the bacteriological and public-health departments. On the first floor is the histological laboratory and demonstration-rooms and on the second the Sutherland Hall, a large room for examinations, the museum, and a well-equipped animal-house. The north block houses the pathology department on the ground floor and the anatomical museum, dissecting-rooms and lecture theatres above. The school now has 409 undergraduates, of whom 50 are women.

FAMILIAL PERIODIC PARALYSIS

SINCE the demonstration by Allott in 1935 of the diminution of serum-potassium during attacks of familial periodic paralysis our knowledge of the condition has advanced considerably. Some of the recent developments were referred to in these columns in August last.[1] During an attack of paralysis the affected muscles are entirely flaccid, and cannot be made to contract either by direct electrical stimulation or by stimulation of their nerve-supply. This fact seems to point to a peripheral rather than a central abnormality, and until lately the evidence suggested that the paralysis was due to an abnormal demand for potassium in the muscles of affected subjects. Last year Pudenz, McIntosh and McEachern found that if potassium was injected intravenously the paralysis was relieved before the level of potassium in the serum rose, which is in agreement with the conception that the additional potassium is taken out of the blood-stream by the tissues suffering from potassium lack. They have now shown,[2] however, that if the venous return from one arm is prevented by a cuff at 60 mm. pressure the intra-arterial injection of potassium chloride in the affected limb does not produce any return of function. On the other hand, if the circulation in one arm is completely cut off by a cuff at 200 mm. pressure, and potassium chloride is injected intravenously in the other, the occluded limb recovers as quickly as the unoccluded. These experiments seem to show that a central factor is involved, but the creatinuria found by these Montreal workers, as well as by Ferrebee, Atchley and Loeb,[3] still seems more likely to be due to a concomitant muscular abnormality than to purely nervous influences. The choline-esterase level in the blood is normal during an attack, but recovery can be brought about without potassium salts by the intravenous administration of the choline esters doryl or mecholyl. Under the influence of these drugs the serum-potassium level rises in the same way as it does in spontaneous recovery, suggesting that potassium is liberated from some organ or tissue and becomes available for use by the affected muscles. At present there is no evidence as to the whereabouts of this potassium storehouse. Whatever the eventual mechanism of the disease may turn out to be, it is clear that there is in affected subjects some metabolic abnormality affecting potassium, and the condition should probably be added to the growing list of inborn errors of metabolism.

CANCER CLINICS

A RECENT deputation to the Minister of Health expressed the hope that the proposed cancer schemes would utilise the facilities of the larger hospitals, voluntary and municipal, rather than lead to the establishment of special clinics not closely linked with general hospitals. The deputation also asked for consultant facilities in the homes of patients. On both these policies Mr. Elliot's reply was encouraging, subject to the advice given him by the medical advisory committee shortly to be appointed. For many reasons he thought it would clearly be desirable for a large and well-equipped hospital to serve the areas of more than one local authority. At present, whatever the future may hold, the only practical methods of treatment for cancer are surgery and radiation. Surgery in this country has definite standards, radiation has not; it is therefore necessary before framing a scheme of clinics to define the minimum requirements for adequate radiation therapy. X-ray apparatus should be available for all patients requiring it to be treated within a fortnight of being identified. Radium should be at the disposal of the therapist in such quantities as will allow him to treat any case with correct doses, using suitable containers. Such treatment must be in the hands of fully trained radiotherapists and it is a question whether a diploma in radiology can in itself be considered as a full qualification; prolonged experience or a complete course of instruction at a recognised centre is also essential. In view of the expensive nature, in time and money, of this training the radiotherapist may expect to have the same status as the surgeon, notwithstanding the nature of the work requires a full-time appointment. At present the number of fully trained radiotherapists is limited, and this fact has a bearing on the possibility of using effectively in the near future any considerable increase in the quantity of radium available. Despite any impression to the contrary given by the recent report (*Lancet*, Feb. 18, p. 403) there are already a number of large treatment centres where all forms of radiation are available in charge of a trained staff. In Manchester, for instance, this centre is attached to a cancer hospital, with adequate surgical service, and

1. *Lancet*, 1938, **2**, 443.
2. Pudenz, R. H., McIntosh, J. F., and McEachern, D., *J. Amer. med. Ass.* 1938, **111**, 2253.
3. Ferrebee, J. W., Atchley, D. W., and Loeb, R. F., *J. clin. Invest.* 1938, **17**, 504.

the steady increase in the number of patients there treated is due to agreements with local authorities and to the diagnostic stations staffed from the centre in municipal and voluntary hospitals throughout the region served by the centre. In this way in the last completed year 29 per cent. of cancer patients in the civic area (pop. 1,039,740) and 26 per cent. in the surrounding area (pop. 1,663,860) actually obtained radiation treatment at the centre. Assuming, as seems fair from figures given in the report, that at least a third as many received surgical treatment, it follows that no less than 40 per cent. of all patients suffering from cancer in the Manchester area were treated—in contrast with the 27 per cent. given in Dr. Mackenzie's sampling inquiry. He estimates that a quarter of all the cases have cancer in accessible sites. The Manchester figures show that three-quarters of the cases in accessible sites were actually treated by radiation at the centre. Again allowing for the numbers submitted to surgery it follows that practically all patients in the Manchester area with cancer in accessible sites actually received treatment. These figures lend point to the deputation's argument.

LIGHT EYES AND GLARE

IT has long been known that albinos, partial albinos, and people in whom the intra-ocular pigment in the iris and retinal-pigment epithelial layer is sparse are more sensitive to light than those more richly endowed in these structures. It is said also that persons with lightly pigmented eyes see less well under low illumination than those with dark eyes; thus negroes are said to see considerably better at night than white persons. De Silva and Robinson,[1] who report experiments on light sensitivity and visual adaptation at low illuminations, examined 1238 subjects, of whom they labelled 620 "light-eyed" (light grey, light blue or iris) and 618 "dark-eyed" (dark brown or dark blue iris). The apparatus used was designed to simulate a night-driving scene: the observer was confronted with two glaring lights and was required to distinguish the direction of stripes painted on a rotating test-object which had its own source of illumination, the threshold of sensibility being determined by increasing the illumination of the test-object until the observer was able to distinguish correctly the direction of its lines. The index of glare sensitivity was expressed in terms of the amount of light required to perceive the lines correctly, and the results supported the conception that light-eyed people, at all ages, are relatively sensitive to glare and are unable to see so well under low illumination. These facts have some practical bearing on driving vehicles at night when light-eyed drivers should presumably take special care.

STERILISATION OF ARMY WATER-SUPPLIES

DURING the war of 1914–18 the sterilisation of water on a large scale by chemical means was introduced by the French authorities about the time of the battle of Verdun, whence it became known as verdunisation. In Bunnau-Varilla's method lorries were used for purifying the water by both chemical and mechanical means—i.e., chlorination and filtration. Inherent disadvantages in these lorries have led to the design of a new type in the Spanish war. Early in 1937 the Spanish republican army put into service some water-sterilising lorries built in Holland, which chlorinated the water and filtered it through sand, eliminating the excess of chlorine with activated charcoal; but they lacked storage tanks for the sterilised water. This type of lorry has been improved and is described by L. Hormaechea, a Spanish engineer attached to the military sanitation service (*Rev. Sanid. Guerra*, June–August, 1938, p. 336). Apart from delivering the purified water at a much greater rate than do other types, and having storage tanks on board, these lorries sterilise the water in a simpler way. The water is drawn in with a centrifugal motor pump, about a fifth of it being passed through a chamber in which it receives and dissolves a dose of about 30 grammes of aluminium sulphate per cubic metre of water, after which it joins the rest of the water on its journey to the chlorinating tank. Organic matter and particles in suspension are thus coagulated and entangled in the gelatinous precipitate of aluminium hydroxide which is formed: $(SO_4)_3Al_2 + 3(CO_3H)_2Ca \rightleftarrows 2Al(OH)_3 + 6CO_2 + 3SO_4Ca$. Chlorination is done with hypochlorite, which decomposes into chlorine and oxygenates the water on its way to the sand filter; as it emerges it is tested with *o*-tolidine for any excess of free chlorine. This method does away with the need for activated charcoal. The tanks and pipes of the installations on the lorries are insulated against changes of temperature with sheets of compressed cork to prevent its freezing in cold weather and becoming unpleasantly lukewarm in hot weather.

THE HOSPITALS IN EMERGENCY

THE Minister of Health is now responsible for the proper use of hospitals in time of war, and besides appointing twelve "hospital officers" to prepare and execute regional schemes he has secured the advice of consultant specialists nominated by the presidents of the colleges of the physicians and surgeons. His plans are outlined in a memorandum just published,[1] and in the next few weeks all the hospitals implicated will be told what is expected of them. The Government does not intend to interfere in their internal management—unless they are to be exclusively used for the military services—but it will make arrangements about the cost of maintaining casualty cases and the cost of alterations and equipment. The hospitals are to be divided into classes according to their proposed function, and some of them will be "affiliated" into groups so as to render mutual assistance and facilitate the transference of patients. The larger institutions which have—or can readily be given—facilities for treating surgical and medical casualties will be prepared for that purpose: besides general hospitals these include certain sanatoria, the larger infectious-diseases hospitals in areas that will be evacuated, and special hospitals able to undertake general work. Where necessary such institutions will be "up-graded" by providing them with appropriate equipment, and if they are in danger areas this equipment will ordinarily be supplied in advance.

On an emergency arising all the hospitals concerned would at once be cleared of those patients that can go home—private cars being used for transport. Selected general hospitals in danger areas—the principal casualty-receiving hospitals—will then be further cleared by sending movable patients by ambulance train or motor-coaches to affiliated institutions in the outer areas. As a hospital becomes mainly available for the immediate reception of casualties its staff will generally be reduced; for the number of beds in use in danger areas will be kept as low as possible

1. De Silva, H. R., and Robinson, P., *Science*, 1938, **88**, 299.

1. Emergency Hospital Organisation. Emergency Medical Services Memo. No. 2 (England and Wales). H.M. Stationery Office. Pp. 29. 6*d*.

(not more than 200) though any others in the building will remain ready in case of extreme need. Smaller hospitals will be employed chiefly for outpatient casualties, and may become mere first-aid posts. Hospitals unsuited by position or character for receiving casualties will mostly be used for convalescent or chronic cases, and they are of less immediate importance than the casualty-receiving hospitals; thus even if they are in danger areas it will not be possible at first to remove those of their patients who are too ill to go home.

In districts where children will be billeted infectious-diseases hospitals will retain their usual function, and the special facilities of other special hospitals will not be ignored. Maternity hospitals or wards will be maintained as such so long as they are still needed, but children's hospitals in the danger areas will immediately be converted to the use of casualties. Most mental hospitals will merely be expected to rearrange their inmates so as to clear a wing or block for casualties, but a few selected ones will be cleared completely, their patients being taken elsewhere. Psychoneurotic casualties will if possible be dealt with separately from the others: they may be admitted to the casualty-receiving institutions, to which a neuropsychiatrist will usually be attached, but special intermediate hospitals, with neurological clinics, will be organised on the fringes of the central areas and mobile teams of neuropsychiatrists will also be formed. There will likewise be mobile surgical teams that can be sent to points of exceptional pressure.

"Affiliation" of hospitals in groups is meant to facilitate the necessary spreading of the skilled personnel and equipment which in peace-time are concentrated at a comparatively small number of institutions. The general idea is that hospitals in the inner (or especially threatened) part of each district should evacuate their patients to affiliated ones in an outer (or safer) zone. In London, and possibly one or two other large cities, the plan is carried further by dividing each district into segments, radiating from the centre, the casualties being evacuated outwards towards the "base hospitals" at the periphery, which will have a senior and more experienced staff. Each group of hospitals will be expected to work out schemes in advance by which the personnel is divided into teams allocated to specific hospitals, and each group is to appoint a responsible "group officer" to represent it in time of peace and to retain responsibility for the organisation of the group in time of war—subject to the direction of the Ministry's "hospital officer" for the region, who will receive regular reports and will collate the work of groups. The arrangements proposed for supplementing staffs have already been described,[2] but are again briefly set out in the memorandum, together with preliminary observations on finance, proposals for record-keeping, and a short account of the various steps to be taken as an emergency develops. To minimise an inevitable run on materials at the beginning of a war all hospitals are asked to keep at least a month's normal supply of drugs and dressings, and some will also be asked to serve as depôts for Government supplies. Some have already been invited to store bedsteads, bedding, and other equipment provided by the Government, and arrangements for distributing about 80,000 bedsteads are known to be in hand. It is estimated that the plans envisaged would provide a total of about 300,000 beds for casualties in England and Wales, of which about 200,000 would be available within twenty-four hours. Half of them would be "first-class surgical beds." But since even this might not suffice the Government is exploring the possibilities of using additional buildings to expand hospitals in the danger areas and of erecting huts for the same purpose.

2. See *Lancet*, Feb. 18, 1939, p. 424.

B.C.G. IN RUMANIA

ADMINISTRATION of B.C.G. to babies has been done on a large scale in Rumania for some dozen years; it started on the initiative of the late Prof. Cantacuzène. Prof. Marfan[1] reported to the French Academy of Medicine on Feb. 7 that the number of persons who have now had the vaccine is nearly half a million. As he pointed out, B.C.G. vaccination is not compulsory in Rumania, but it has been very well received, thanks partly to the favourable conditions under which it was introduced. Originally given by the mouth, the vaccine will in future be given more and more by the subcutaneous route, with which tests carried out in the Rumanian army have been encouraging. The main conclusions that the Rumanian medical profession has reached are that B.C.G. vaccination is harmless, that it appreciably reduces the tuberculosis mortality among children—notably among those who live in contact with cases of tuberculosis during the first three years of life—and that the tuberculosis morbidity is also reduced. At present about 70 per cent. of the babies in Bucharest are given B.C.G. at birth under conditions calculated to facilitate follow-up studies. The tuberculosis mortality during the first year of life is said to be 1·3 per 1000 among the B.C.G. babies, compared with about 4 per 1000 among the others. In the second year of life, the corresponding figures are 0·9 and 3 respectively, and in the third year of life they are 0·4 and 2. There does not however appear to be much improvement in the general infant mortality in Bucharest where the rate is 167 per 1000. Among the B.C.G.-vaccinated babies it is 153.

In the competition for designs for the rebuilding of St. George's Hospital that of W. H. Watkins and Partners was placed first. The plans of the first five designs will be on view to the public at 15, Knightsbridge, S.W., from 10 A.M. to 5 P.M. daily except Sunday until March 11.

1. Marfan, C., *Bull. Acad. Méd. Paris*, 1939, **121**, 176.

THE LANCET 100 YEARS AGO

March 2, 1839, *p.* 825.

From a lecture delivered at the College of France by Monsieur Magendie.

. . . Many a drug has owed its vogue and pretended efficaciousness to errors which the habit of observing can alone ensure us from committing. You try a new mode of treatment, your patient recovers: are you quite sure that the supposed complaint really existed? There is not an old woman without her formula against rabies; and many intelligent and conscientious persons will tell you of individuals who, after having been bitten by mad dogs, made use of certain drugs and recovered. Recovered from what, if the dogs were not diseased? . . . A certain medicine appears to succeed today, and in fifteen days hence it will fail when exhibited under the same circumstances; some persons would not hesitate to attribute the failure to the state of the *medical constitution*. But this, and similar methods of evading contradictory facts, are mere *ignes fatui*; with their aid we have explanations for everything, and need never fear being caught in a difficulty.

SPECIAL ARTICLES

MEDICAL RESEARCH COUNCIL

REPORT FOR 1937–38[1]

IN the introduction to their annual report the Medical Research Council contrast the speed of the application of new methods of cure with the regrettable delay in the application of knowledge in preventive medicine, giving cogent examples in the neglect of diphtheria prophylaxis, of modern views on dietetics, and of breast-feeding. Though they emphasise that their own function is the promotion of discovery rather than its application, they are necessarily interested in the enlightenment, education, and guidance of the public and deplore the fact that "it does not seem to be anybody's business in this country to undertake this task."

The research policy of the council, here briefly outlined, is that indicated by Sir Edward Mellanby in his Harveian oration (*Lancet*, 1938, **2**, 929): the stimulation of investigations by groups of workers on a broad basis—for example, of virus diseases, endocrinology, or chemotherapy—rather than of particular diseases. Encouragement is given alike to the direct study of disease and to that of the fundamental sciences, though at the moment, in view of the comparative dearth of work in these subjects, clinical science and experimental pathology are favoured. But the council "send out fleets in several directions and in different seas, hoping that individuals will seize any special prize of discovery that shows itself in any quarter."

The planning and carrying out of

Investigations for Government Departments

have come to occupy more and more of the time both of the administrative staff of the council and of their expert technical staff.

Tropical medical research was gladly undertaken, at the instance of the Colonial Office, since it clearly offered unequalled opportunities for discoveries and for their application in raising the standard of health in countries for which Great Britain has a special duty and responsibility. In the three years since the scheme was initiated 8 junior and 3 senior fellowships have been awarded for the training of investigators, and fully trained investigators have been sent to the Gambia, Uganda, and Tanganyika Territory to study the action of chemotherapeutic drugs on sleeping sickness, the natural history of yaws, and other problems.

Nutritional problems in the colonies.—The council have appointed, for a period of five years in the first instance, a small staff to undertake the scientific coördination of a series of field surveys of diet in relation to health and physique in the colonial territories. The actual surveys are to be made by officers seconded from the colonial service in each territory. Dr. B. S. Platt has been appointed head of the unit, which will coördinate the inquiries and ensure the adoption of comparable methods and standards in the different territories and the uniform interpretation of the complete results. Dr. Platt has now gone to Nyasaland to start a comprehensive investigation involving dietetic, nutritional, agricultural, anthropological, and social studies. It is hoped that an important development of this scheme will be the greater encouragement of the production of food crops for improving the physical and mental condition of the population. Dr. Platt has already been able to confirm the curative properties of nicotinic acid in pellagra among the maize-eating population.

Chronic pulmonary disease among coalminers.—Coalminers are subject to disabling chronic pulmonary disease which resembles silicosis clinically but not radiologically. The economic importance to the workers of the distinction is that whereas silicosis is a disease allowing compensation, no such claim is allowed ordinarily to those who develop other forms of chronic pulmonary disease. Whether this condition, when disabling, should be scheduled as an occupational disease under the Workmen's Compensation Act along with silicosis is an administrative problem outside the province of the council but at the request of the Home Office and the Mines Department an investigation has been undertaken into its origin, symptoms, and radiological manifestations. Dr. E. L. Middleton of the Home Office is responsible for the coördination of the research of a team of workers, under the control of Dr. P. D'Arcy Hart, which includes medical men, chemists, physicists, statisticians, geologists, and mine inspectors; the mine-owners and the workers themselves have given wholehearted coöperation. A particular colliery in the anthracite coalfield in South Wales was selected for intensive study, all the workers being examined in order to obtain better knowledge of the incidence of pulmonary lesions, grave and slight, and the environmental conditions in the pit have been closely studied. The observations were concluded in March, 1938, and hundreds of case-records and X-ray photographs were then analysed and compared in order to determine further lines of inquiry. Several pits of different types have been selected, some with a high, others with a low, incidence of pulmonary disease among their workers. Investigations at these collieries will be restricted to special studies in regard to certain classes of occupation. The council add a reminder that research of this kind is necessarily slow, and cannot be accelerated.

Physical exercise and the public health.—In connexion with developments arising from the Physical Training and Recreation Act, 1937, the council point out that little is known as to the physiological basis of the processes underlying the feeling of well-being or of the mechanism of improved physique and health resulting from exercise in the healthy person. Training in various exercises and sports is still largely based on empiricism, and the deleterious effects which may result from unsuitable forms of physical activity require analysis. In man, as in animals, physical exercise is closely related to nutrition; the different nature of the food eaten by races living under otherwise similar conditions explains at least some of the differences between them in activity, vitality, physical condition, and state of health. In order to provide a scientific basis for the national physical training movement, the council have consented to advise the Board of Education on investigations concerning the effects of effort, repose, diet, and growth in man; also on experimental research which might appropriately be carried out at universities and teaching hospitals. To this end a physical exercise research committee has been appointed under the chairmanship of Sir Henry Dale. The committee have already considered the accommodation and facilities required for the teaching of physiology and anatomy at the proposed National College of Physical Training. They have also collaborated in drawing up a form of standardised medical examination—to be used especially in the case of students at universities—which would provide a comprehensive record of their physical condition. The main work of the committee, however, will be to advise the council on matters relating to the planning and initiating of investigations on questions of physical exercise and its relation to health.

The systematic study of the *toxicity of industrial solvents* was undertaken by the council at the request

1. London: H.M. Stationery Office. Cmd. 5939. 1939. Pp. 206. 3s. 6d.

of the Home Office. Various volatile organic substances, when used in industry on a large scale or in enclosed spaces, may result in serious illness or even death; moreover, a slow toxic effect may result in some chronic disabling disease after prolonged exposure. The committee set up to initiate and control investigations on this subject have arranged for a summary of all the relevant literature by Dr. Ethel Browning, which has been published, and for experimental studies at the Chemical Defence Research Station, Porton, by Wing-Commander T. J. McClurkin, who has worked in close collaboration with Prof. G. R. Cameron. During the past years, studies have been made of toxicity of the solvents methylene dichloride and ethylene dichloride, and of the substance methyl mercuric iodide, and toxicity tests of new organic solvents introduced into industry will be carried out at an early stage.

Other investigations undertaken by the council at the request of Government departments include those into the infestation of houses, old and new, by bedbugs; the vitamin content of canned food; copying pencils, with the object of finding a type of lead which is innocuous when lodged beneath the skin; and eyestrain in industry and means for its prevention. Throughout the past year the council have also been engaged, at the request of the Committee of Imperial Defence, in the organisation of important medical and scientific services of an emergency nature. The cost of these services is separately provided.

Other Research in Progress

TREATMENT OF CANCER BY RADIUM

Until recent years clinical research centres were investigating only the effects of the "interstitial" and "surface" methods of treating cancer. Treatment by means of the rays from a large mass of radium situated at a distance from the patient was started in London in 1933. During the first four years the Radium Beam Therapy Research, conducted under a special governing body, was restricted to cases of cancer of the mouth, tongue, pharynx, and larynx. The results have been encouraging, though most of the patients were in an advanced and inoperable stage of cancer. It is noted that the patient with cancer undergoing radium beam therapy cannot expect to escape a period of some discomfort during and immediately after the treatment. New technical methods which have been elaborated as the result of close coöperation between physicists and clinicians in this research are being widely used as models at other centres. The research is being extended at least until the end of 1939. The method is capable of destroying accessible primary growths, and, after a course of irradiation from a 5-gramme unit, the secondary growths in the neck usually disappear but, if present in the chest, they escape destruction. Work has recently been begun with a 10-gramme unit, and it is proposed shortly to make a comparative study of the relative values of radium beam therapy and of high voltage X rays in the treatment of cancer. The new work on the biological effects of neutrons has not escaped attention, nor the possibility that both radium and X rays will be superseded by the cyclotron in the treatment of cancer. Dr. F. G. Spear, of the council's staff, is at present in California, working with Prof. E. O. Lawrence who discovered and developed the cyclotron.

RECENT WORK ON HORMONES

Among the important discoveries made during the year that of the synthetic œstrogen diethyl-stilbœstrol by Dodds, Lawson, and Robinson has pride of place. Although it has some structural resemblance to the natural female hormone, œstradiol, it is considerably more active, and is effective even when taken in small quantities by mouth.

This synthesis raises the hope that the properties and actions of some other hormones may eventually be reproduced by substances of a simpler chemical nature and more easily made than the natural products. Mr. A. S. Parkes, Sc.D., and Prof. E. C. Dodds have demonstrated that diethyl-stilbœstrol taken by mouth inhibits the changes of the uterus which precede gestation and thereby prevents or interrupts the implantation of the fertilised ovum in the uterine mucous membrane. In view of the implications of these studies, which are still in the experimental stage, the council point out the possible detrimental effects and even dangers attached to the use of œstrogens and their synthetic derivatives for such purposes. In inhibiting the progestational changes, they are capable, if given in excessive doses of causing tremendous œdema and hyperæmia of the endometrium of the uterus. The remoter effects of excess of such substances on the activities of the anterior-pituitary lobe are under investigation.

Miss Ruth Deanesly, D.Sc., and Dr. Parkes, working at the National Institute for Medical Research, have found experimentally in animals that a simple and effective method of producing prolonged action of certain hormones is to insert them under the skin in the form of crystals or compressed tablets. In this form the substances are absorbed at a very slow rate and the effect of the one tablet or crystal may be sustained for months or even years. The exact amount of hormone used can be determined after any length of time by removal of the crystal or tablet and weighing. Experiments have been made with œstrone, œstradiol, testosterone, and testosterone propionate, and others with progesterone and diethyl-stilbœstrol are in progress. Dr. P. M. F. Bishop has found clinically that a small tablet of œstrone relieved menopausal symptoms in a woman over a period of weeks. There is no evidence that the hormones of a protein nature, such as insulin, can be given in this form with advantage.

In the course of an attempt to induce immunity in dogs to the so-called "diabetogenic" action of extracts of the anterior-pituitary gland Mr. F. G. Young, Ph.D., has succeeded in producing a condition of diabetes which continues permanently without further injections.

The pituitary extract was injected daily and at first some tolerance was established but, with progressive increase of the dose, the tolerance disappeared and large quantities of sugar were passed in the urine even when no further anterior-pituitary injections were given. The islet tissue in the pancreas of these dogs shows changes varying from slight abnormality up to practically complete loss of cellular structure. Further evidence that the extracts of anterior-pituitary gland produce diabetes in dogs by suppressing the functional activity of the islets of Langerhans has been supplied by Prof. C. H. Best and his co-workers at Toronto. A detailed study of the metabolism of these diabetic dogs on (*a*) a high protein diet, (*b*) a diet rich in carbohydrates, and (*c*) one consisting almost entirely of fats throws fresh light on the relation of diet to the diabetic condition.

It is not yet certain whether the anterior-pituitary extract acts primarily by raising the threshold of sensitivity of the tissues against insulin or by a direct effect on the islet cells or by both mechanisms.

UNIT FOR SURGICAL RESEARCH

The new unit for clinical research in surgery at Edinburgh, under the direction of Mr. W. C. Wilson,

has suffered the loss of a keen and experienced guide by the death of Sir David Wilkie, but the facilities he provided and the spirit with which he endowed his collaborators will endure.

The investigation of burns and scalds and the healing of wounds caused by them will be continued; further chemical fractionation of damaged skin is being attempted and growth factors in skin are being studied. Experiments on the effect of acetylcholine on the excitability of the cerebral motor cortex are in progress. Circulatory disturbances in the limbs following injury, normal and abnormal sweat secretion, the relation of the thymus gland to creatine metabolism, and the renal function of children after severe pneumococcal infections are being studied by various workers.

The council note the vast opportunities for experimental investigation into problems associated with surgery and express the hope that research will be extended to the study of the causes especially of morbid conditions of the digestive system.

THE PHYSIOLOGICAL ACTIONS OF ALCOHOL

The council draw attention to the revised third edition of the book "Alcohol: its action on the human organism" which has recently been issued under their auspices. It gives not only the results of ad-hoc scientific investigations but also an impartial account of experimental and clinical data as to the actions of alcohol.

The depressant effects of alcohol upon critical judgment and neuromuscular coördination have a bearing on the causation of road accidents; some psychological experiments are discussed relating to the effects of different amounts of alcohol on the skill and initiative of motor-drivers. A review is given of recent work on the lowest concentration of alcohol in the blood which may be incompatible with the safe control of a motor vehicle. The sections of the book relating to the bodily effects of chronic alcoholic intoxication refer to recent work, mainly American, on the parts played by nutritional deficiencies in causing certain of the symptoms. "Alcoholic neuritis" is now regarded as a nutritional disorder depending on deficiency of the B-vitamins, and especially of vitamin B_1, in the alcoholic's diet. Other morbid effects of chronic alcoholism, notably the gastric changes and the "alcoholic heart," may also be due at least in part to vitamin-B_1 deficiency.

Alcoholic neuritis sometimes responds quickly to adequate doses of the vitamin, but clinicians in this country have rarely been able to obtain such dramatically rapid cures as have been reported in America.

EPIDEMICS IN SCHOOLS

During the year an interim report on an inquiry into the prevalence and mode of spread of minor epidemics in residential schools was published.

One of the results obtained from analysis of the data was that the incidence of nasopharyngeal infections such as influenza, colds, and sore throats, upon boys and girls with or without tonsils did not differ. There was evidence that in selected cases the operation is of value, but not that there is any justification for a ritual now practised upon more than 50 per cent. of the children admitted to public schools.

Noteworthy differences of incidence between boys and girls with respect to certain illnesses were brought out. Boys suffer twice as frequently from middle-ear disease, two and a half times as frequently from pneumonia, and eleven times as frequently from acute rheumatism. This may be a real sexual difference, but it may in part be due to a stricter supervision of girls, earlier isolation of the sick and less close contact in bedrooms.

The report provides the general reader with an account, based upon an adequate sample, of the kind of information which schools can give, and enables him to judge what contributions to knowledge of hygiene and general epidemiology may reasonably be expected from this source. The responsible committee are continuing to collect sickness records from 13 schools (9 boys' and 4 girls'). Some of these have suffered from persistently high attack-rates of certain diseases, such as rheumatism, pneumonia, and various infectious fevers, while others have shown persistently low rates; further observation should show whether these differences remain constant or were due to chance. The committee have taken steps to obtain sickness records from a certain number of co-educational schools, where boys and girls share a common environment, and receive the same treatment when ill.

STATISTICAL METHODS IN MEDICAL RESEARCH

All the purely statistical work financed by the council and most of the statistical work undertaken by the medical staff of the Ministry of Health now comes under the notice of the statistical committee as a whole or of members of it, and an important fraction has its origin in recommendations of the committee, over which Prof. Major Greenwood presides. In addition, the opinion of the committee is habitually sought on statistical questions—whether of technique or interpretation—incidental to other investigations. The work of the committee has been heavy and at times invidious; there is a risk that statistical criticism or advice may excite in other research workers something of the irritation or perplexity which a professional opinion upon a difficult point in law sometimes produces in a layman. The statistical committee have sometimes passed reports of which the technical statistical standard would not be regarded by professional statisticians as satisfactory, but of which publication is justified by the novelty and interest of the subject matter. During the past seventeen years many valuable reports of a statistical kind have been published which no journal could have printed, and the system adopted for their scrutiny has done much to ensure the accuracy and intelligibility of their presentation.

NEW BUILDINGS FOR THE NATIONAL INSTITUTE

The proposed migration of the National Institute for Medical Research from Hampstead to Mill Hill was recorded in last year's report. Plans have been approved, and a beginning was made with the work of construction, which will take two years, last August. The new National Institute will provide accommodation for the central laboratory for research in chemotherapy, arrangements for which are being gradually developed. In view of the fact that the nutrition laboratory at Mill Hill will now occupy a relatively subordinate place, instead of being one of the chief buildings on the site, it has been decided to use the fund subscribed for a memorial to Sir Walter Fletcher for the provision of a hall for meetings and lectures at the new institute. The council have agreed to meet the whole cost of the nutrition laboratory, which was to have been the memorial, from their own funds.

(To be concluded)

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL CURRICULUM

AT a debate at the Edinburgh University Union last week undergraduates took advantage of the opportunity to say what they thought of medical teaching. Prof. Stanley Davidson, in summing up the debate, laid stress on the need for reorganising dispensary practice, and said that more time should be given to the teaching of medical psychology, child life and health, and infectious diseases. Arrangements for a period of residence in hospital were particularly important, and the teaching of minor surgery should be amplified. Under the new curriculum the summer vacation would be used to increase the amount of clinical teaching. More individual clinical instruction was needed, but the real problem was that there were too many students for the amount of material and the number of teachers available. This could be corrected by limiting the number of students and by increasing the clinical facilities in the municipal hospitals, as was done at present in Edinburgh. Since the fees paid by students covered only a small portion of the teaching expenses, the cost of additions to the teaching staffs would have to be met either by raising the fees or by additional Government grants.

ROYAL MEDICAL SOCIETY

Prof. R. M. Johnstone, senior president, presided over the annual dinner of the Royal Medical Society last week. Sir Joseph Barcroft was the guest of the evening, and the other speakers were the junior presidents, Dr. D. A. C. McRae, Dr. R. B. Hunter, and Dr. P. E. Brown, the presidents of the Royal College of Physicians and of the Royal College of Surgeons, and Dr. G. J. Linklater. There was a large gathering of both active and senior members, who enjoyed the brilliant and entertaining speaking which is usually heard at this function. The presidents may be warmly congratulated on the success of the 202nd session.

EXTENSIONS TO EDINBURGH ROYAL INFIRMARY

ON March 1 the Simpson Memorial Maternity Pavilion and the Florence Nightingale Nurses' Home were opened for the reception of patients and nurses, though their formal opening will take place later. These buildings occupy the site of George Watson's College which stood alongside the gynæcological block of the Royal Infirmary.

The new maternity pavilion replaces the Royal Simpson Memorial Maternity Hospital, whose accommodation had become inadequate after an honoured career of sixty years, and which was taken over by the Royal Infirmary in 1930. Soon after the patients are transferred a banquet will be held in the old hospital, at which the staff and former residents will say a suitable farewell to the institution. The Pavilion is a five-storied building built round an open rectangular square. To the south it overlooks the Meadows, an open municipal park, and its southern balconies command a fine view of Arthur's Seat and the Pentland Hills. The pavilion contains 122 beds, of which 30 on the ground floor are for antenatal work. Normal cases are accommodated on the first, second and third floors, and these constitute three charges, each with its own chief and staff. The top floor is an observation ward of 20 beds and is a self-contained unit with a separate lift and staircase. The delivery wards for the three main charges are all on the north side of the first floor. Here the building is only two-storied, thus providing ample air and light to every room. Each charge contains 2 six-bedded wards, 4 two-bedded wards and 4 single wards. All the wards and nurseries have south verandahs which can accommodate all the beds. The beds of each floor are distributed in two groups in wings which project to the south. These are connected on each floor by corridors off which open the nurseries, infants' bathrooms, milk kitchens, service kitchens, sisters' and doctors' rooms, work-rooms, lavatories and so on. Here also is a special dark room for the treatment of eclampsia. The nurseries are air-conditioned and are divided into three sections for healthy, sick, and premature infants. The temperature and humidity of each section can be separately controlled. Each half of the pavilion is served by separate lifts and staircases, so that in the event of infection only half of the floor need be closed.

Scotsman

FIG. 2—A nurse's bedroom.

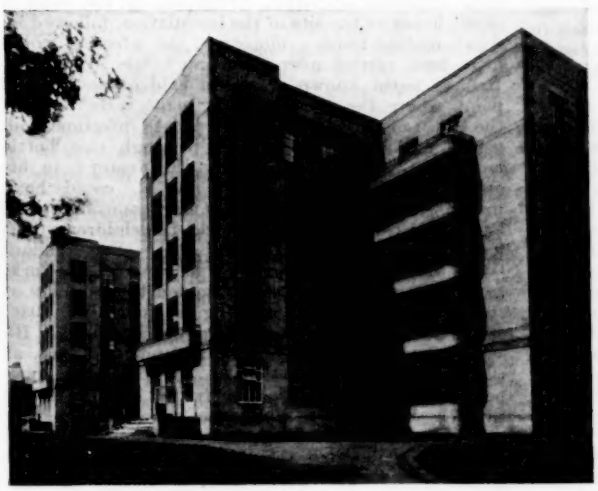
The antenatal section is designed to afford quick reception and evacuation of patients. Patients enter by the north-west door and are dealt with at once by the lady almoner and the reception sister, who take particulars of their cases. Old patients receive their record cards at the same office. Patients are then called in turn from the waiting-room, to a dressing-cubicle, where urines are collected, and from there to one of the eight examination-rooms, where the examination is at once proceeded with. This done, the patient passes back to the dressing-cubicle and so out. On the ground floor near the north-east entrance is the postnatal and child-welfare section, where the progress of mother and infant is noted weekly, the latter being on the books for one year. Here also instructional classes for mothers are held. In addition, this floor contains the wards for antenatal inpatients, with a separate delivery suite, the examination suite for V.D. outpatients and beds for V.D. inpatients, an emergency reception and delivery suite for dealing with unknown emergencies, and the X-ray installation. The delivery suites for the three main charges consist of reception- and preparation-rooms fitted with special baths,

12 first-stage labour rooms and 4 delivery-rooms. The first-stage rooms are equipped with delivery beds, sterilisers and anæsthetic trolleys so that normal deliveries may be completed in them if necessary. The windows are doubled and the walls made of special sound-absorbing material. The delivery suites are on the north side and consist of two pairs of delivery-rooms, each with its scrub-up rooms between. A gallery runs along the 4 rooms so that instruction may be given on four cases at any time. The sliding type of delivery bed has been selected. On the same floor is a fully equipped operating-theatre for cæsarean section and other operative work. Sterilising for the whole hospital is carried out in a central room. On the second floor is a large lecture theatre seating 250. This will be used for systematic clinical lectures to pupil-nurses, students, and postgraduates. The observation ward on the fourth floor has its own first-stage labour rooms and delivery suite and operating-theatre.

Scotsman

FIG. 3—Florence Nightingale Nurses' Home. Recreation hall.

The work in the hospital will be distributed throughout three charges, each with its own chief, senior and junior obstetricians, clinical assistants and three house-surgeons. The senior clinical assistant and all the house-surgeons will be resident in the Pavilion, which has a complete system of internal telephones. The three gynæcological charges in the Royal Infirmary will be combined with the obstetric charges and the same staff will be in charge of the combined units. Resident house-surgeons will stay one year in the Pavilion. They will do four months as junior resident obstetrical house-surgeon, four months as gynæcological house-surgeon and four months as senior resident obstetrical house-surgeon. These resident-ships will be open to both sexes. A resident undergraduate hostel is situated in a neighbouring street with direct access to the Pavilion. In the Pavilion itself accommodation and board is provided for six postgraduates. Facilities for postgraduate instruction will be abundantly available, and postgraduates will be taken for periods of one week and upwards. Postgraduate teaching includes lectures and demonstrations and attendance at normal and emergency deliveries and at the antenatal and postnatal clinics. The charge for board and lodging is 3½ guineas a week and the fees range from 2½ guineas for one week to 12 guineas for three months. A special intensive course in midwifery and gynæcology will be held in July, the fee for this being £25 including board and lodging. The records of the hospital will be in charge of a special medical registrar, who will issue an annual medical and statistical report.



Evening Dispatch, Edinburgh

FIG. 1—Simpson Memorial Maternity Pavilion. South view.

THE NURSES' HOME

The Home is a seven-storied building containing 280 bedrooms. Each bedroom has about 110 sq. ft. of floor space, and is heated by a steam radiator and has a wash-hand basin with hot and cold water. The cupboards (hanging and shelf) and chests of drawers are built in, and each room is provided, in addition to the bed, with a rug, occasional and bentwood chairs, linen basket, writing table and locker (fig. 2). The lavatory and bathroom accommodation is adequate, there being one bath to every five nurses. There are also shampoo-rooms and pantries on every floor where occasional teas may be prepared by the nurses themselves. A sick-room of 23 beds occupies the top floor, which commands fine views of the Castle to the north and the Pentland Hills to the south. In the maternity section of the Home are large and well-equipped class- and study-rooms. The ground floor of the Home contains dining-rooms, library, sitting- and smoking-rooms. The recreation hall (fig. 3) and adjacent sitting-rooms can be thrown into one large hall suitable for dances and other functions.

APPLICATIONS are invited by the Royal Society of Medicine for the William Gibson research scholarship for medical women. Further information will be found in our advertisement columns.

MEDICINE AND THE LAW

Tuberculosis after Anti-diphtheria Inoculation

AFTER 12 days' hearing in the Dublin High Court, before the president and a jury, an end was reached on Feb. 23 in the claim for damages arising out of the inoculation against diphtheria of children attending the Irish College at Ring, co. Waterford. The serious allegations against the Wellcome Foundation (which had prepared and marketed the T.A.F. used for inoculating the children) were rejected, the jury returning a verdict for the defendants after an absence of less than half an hour.

Two years ago (see *Lancet*, 1937, **1**, 1305, 1480) we noted the result of an inquest at Ring on the death of a girl who had been treated with injections of T.A.F.; Dr. D. T. McCarthy of Dungarvan, who had administered the injections, obtained the material from Dr. Michael O'Farrell, county medical officer of health. He had inoculated 44 children at St. Augustine's College on three dates in November, 1936, and no illness had resulted; he had inoculated 38 children on the same dates at Ring College; several children in the latter group had sore arms and one girl died; post-mortem examination showed generalised tuberculous infection without meningitis. The coroner told the jury that, if they believed they were not in a position to give an opinion as to the origin of the tubercle bacilli, they should say so; "I cannot see," he added, "how you are in such a position." The coroner's jury, undeterred by his hint, returned a long and technical verdict declaring that the tuberculous condition was originated by the inoculation in November and that tubercle bacilli were present in a 25 c.cm. bottle of prophylactic labelled "T.A.F. Burroughs Wellcome," from which Dr McCarthy had extracted the material for inoculating the deceased. In due course proceedings for damages for negligence were launched against Dr. McCarthy and the Wellcome Foundation as joint defendants. No fewer than eight King's Counsel (for there are still King's Counsel in Eire) appeared, along with members of the junior bar. The case, of which the *Irish Times* gives an excellent report, was rhetorically described in the opening speech as "unique" and "of vast and critical importance"; "it is no exaggeration to say that the reports of this case, and the results of it, will be greatly canvassed . . . all over the world."

THE PLAINTIFFS' CASE

The plaintiffs were Michael O. Cionnfhaolaidh (*anglice* Kineally), claiming damages on his own and his wife's behalf in respect of the death of his daughter, and his three sons who had also suffered as the result of the inoculations. Mr. Kineally claimed £16,100. His counsel made it clear that the outbreak of tuberculous disease among these children must have been due to one of two causes: either Burroughs Wellcome had issued by mistake a bottle containing a suspension of live tubercle bacilli, or else there had been some negligence or mishandling by Dr. McCarthy in administering the contents of a bottle which purported to contain, and really did contain, T.A.F. No other alternative was possible. By a forensic paradox plaintiffs' counsel in both the opening and final speeches and at all other times entirely disclaimed any suggestion of negligence against Dr. McCarthy; indeed, as the president of the court remarked to the jury, the plaintiffs actually went out of their way to say that he was not negligent. The defendant company's counsel offered his own theory of the reason why the doctor had been named as a defendant. The Wellcome Foundation was an English concern and the plaintiffs could not ordinarily sue it in an Irish court; by making an Irishman a defendant they could name the Foundation as an additional defendant and could sue it in Eire. Suggestions were made during the course of the case that the tuberculous infection might have been due to a fleck of sputum encountering the needle, or to contamination of the needle through its penetrating a cold abscess, or otherwise to faulty sterilisation. Plaintiffs' counsel from first to last scouted these hypotheses; the claim was so conducted as to leave no possible explanation except the substitution of a bottle containing live tubercle bacilli for a bottle of T.A.F. It was alleged that the company "prepared life-giving medicines almost side by side with death-dealing bacilli." "Life and death were being manufactured side by side by Burroughs Wellcome, and the question would be 'was the life sufficiently segregated from the death'?" Dr. McCarthy, describing in the witness-box his methods of injection and sterilisations (to which not a little criticism was directed during the course of the case), said it was his theory that he received a bottle of live tubercle bacilli instead of a bottle of T.A.F. Mr. Patrick Kiely, F.R.C.S., lecturer in operative surgery at University College, Cork, described the condition of the affected children. They were suffering from primary tuberculous ulcers, and secondly, from tuberculosis of the arm-pit glands. He said he formed the opinion that the material injected contained a strong and uniformly disseminated suspension of live and virulent tubercle bacilli. The hypothesis of accidental sputum on the syringe was, he thought, most unlikely; so also was the theory of infection from a cold abscess because of its rarity in such a position, the great improbability of such a swelling being unnoticed if present, the acknowledged scarceness of tubercle bacilli in cold abscess, and the wiping effect on the needle of the tissues and the rubber cap of the bottle. He agreed, however, that the substitution of the wrong bottle was also most unlikely. Mr. Henry MacAuley, a Dublin surgeon, also gave reasons against the theories of the sputum and the cold abscess. Sputum was a mixed infection: if it had been present, he would have expected in many, if not all, of the cases a septic lesion at the site of the inoculation, followed by a tuberculous lesion; moreover, the infection would have been carried over from one bottle to another. He had never known a case of cold abscess at the point where the injection was made. He thought the cause of the children's illness was infection from germs uniformly disseminated through one bottle before the bottle was used by the doctor; in his opinion a preparation called B.C.G. could have produced similar symptoms, but in cross-examination he refused to say that he thought the children might have been inoculated with B.C.G. Dr. William O'Donovan, pathologist, of University College, Cork, gave evidence that he had examined the contents of the second bottle used at Ring in November, 1936, and had found no sign of infecting organisms. He said he had never wavered in his conclusion that, at the moment of inoculation at Ring, a bottle purporting to contain T.A.F. actually contained live tubercle bacilli. Dr. John McGrath, state pathologist (but not appearing in this case in his official capacity), elaborated the theory of the substituted bottle. He had been to the Wellcome Foundation laboratories last April and he had seen guineapigs and rabbits which he understood were used for experimental work on tuberculosis. In another part

of the same building was a bacteriological laboratory. He was informed that suspensions of tubercle bacilli, for use in infecting the animals, were prepared on the upper floor of another building; on a lower floor of the same there were animal rooms. He described what he saw of the preparation of a bottle of T.A.F. and he said he thought it possible that a bottle containing a uniform suspension of bacilli had been issued by the company by mistake. If it suited his purpose, a worker could have filled a 25 c.cm. bottle similar to one produced in court with a suspension of tubercle bacilli for use on animals: the doors of the packing-room were apparently open: having filled the bottle, the worker could convey it accidentally to the packing-room and there, by mischance or lack of memory, might lay it down among others which closely resembled it; it would then go through the routine of labelling and packing and be sent out as T.A.F. In cross-examination Dr. McGrath agreed that at the inquest he had first suggested that T.B. might have got into a bottle at the laboratories and might still have been active when used at Ring; he knew now that this was highly improbable. After calling further witnesses the plaintiffs closed their case. By direction of the court Dr. McCarthy was at this stage dismissed from the case, and the claim now proceeded against the Wellcome Foundation alone.

THE WELLCOME FOUNDATION'S REPLY

Opening the Foundation's defence, Mr. J. M. FitzGerald, K.C., explained that the late Sir Henry Wellcome, who owned all the shares in Burroughs Wellcome, had so constituted the Wellcome Foundation that all profits were directed to research; there were no hungry shareholders. The plaintiffs had made no general charge of negligence against the company; the allegations related to a single bottle. He ridiculed the idea that an employee could by oversight go to the only place in the factory where these bottles were to be found before labelling, could walk in with a bottle of this terrible poison in his pocket, and could substitute the poison for the T.A.F. To that theory, said Mr. FitzGerald, I apply what Dr. McGrath said at the inquest about a similar theory—"short of insanity such a thing could not have happened." The jury had been told that there must have been a bottle containing an even suspension of bacilli because the symptoms of the children were uniform. The symptoms were not uniform. They all began with sores, it was true; but some sores showed in a month, some after three months, and one child was said to have first shown infection after twelve months. If a bottle contained a suspension of tubercle bacilli strong enough to look like T.A.F. when shaken up, the suspension would contain an amount at least 50 times as great as the amount of tuberculin used medicinally, and the effect on the children would have been early and severe. Dr. McGrath was the only doctor who, through thick and thin, had supported the plaintiffs' story of a substituted bottle; at the inquest he had charged the company with having allowed a bottle of T.A.B. to become contaminated through carelessness in manufacture; he now fell back on the theory of the substitution by an absent-minded worker. Mr. FitzGerald described the system of sterilisation used by Dr. McCarthy and the nurses as incomplete and unsatisfactory. He went on to describe the preparation of T.A.F. at the defendants' laboratories. The room where the serum was made was as much cut off from the room where the tubercle suspension was made as if there was a sea between them. There were at least six separate inspections and checks of every tray and every bottle before the bottles were packed from the trays. There was no evidence whatever of negligence, and the jury could not act on suspicion, surmise, or speculation.

EVIDENCE FOR THE DEFENCE

The first witness called for the Wellcome Foundation was Dr. H. J. Parish, who has been its principal bacteriologist since 1930. He told the court how the preparation of T.A.F. was carried out in building No. 62 of the laboratories, the material being then taken in 4-litre bottles to building No. 5. In neither of these buildings were there any living organisms in suspension. From No. 5 the product went into cold storage for over a year and passed a series of elaborate tests (for sterility, toxicity, and potency) in compliance with the Therapeutic Substances Act. There was also a test to see that the phenol content was correct. The filling room, where the small bottles were filled from bulk, was regarded as a "sacred room"; he himself entered it only to test the air in order to ensure that it was sterile. Suspensions of tubercle bacilli were made in building No. 61 or on the ground floor of No. 62 where the T.B. animals were kept. There was no connexion between the ground floor of No. 62 and the top of the building. An inexperienced worker might confuse the appearance of a bottle of tubercle suspension with that of a bottle of T.A.F., but anyone familiar with the two would notice a distinct difference. Tubercle suspension was put into 50 c.cm. bottles, never into 25 c.cm. bottles which were used for T.A.F. There would be approximately 1,000,000,000 tubercle bacilli in one cubic centimetre of the suspension; if it were injected into a normal child, he would expect the child's death within a month. He had obtained portions of the unfinished bottle of T.A.F. left over by Dr. McCarthy after the Ring inoculations and also of eight bottles of the same batch. Tests showed that none of the contents contained any organisms; he had injected guineapigs with the contents and none showed evidence of tuberculosis; samples of the contents were intentionally infected with tubercle bacilli and the bacilli died rapidly owing to the presence of the carbolic acid. Dr. Parish also described an experiment made by putting an infected syringe in contact with sterile T.A.F. He put a minute drop of tubercle-infected sputum on the end of the plunger of a syringe similar to that used by Dr. McCarthy at Ring; guineapigs injected with 1 c.cm. of the T.A.F. all developed tuberculosis. Repeated experiments showed like results. The sputum would be carried into the bottle and infect the entire contents. Describing Dr. McGrath's theory as "a damnable accusation," Dr. Parish said it would be criminally wicked if any culture were allowed to enter the building where there were products for human use. Prof. John Blacklock, professor of pathology at Glasgow University, spoke of tests he had made of quantities of T.A.F., including some from the batch used at Ring; all were free from infection. After introducing a suspension of tubercle bacilli into T.A.F., he found that in six days or less all the tubercle bacilli were dead. Experiment showed that, if a syringe were used as Dr. McCarthy used it, it was possible for organisms present in the needle of the syringe to contaminate a whole bottle of T.A.F. Prof. Blacklock also confirmed the possibility of infection either by flecks of sputum or by striking a cold abscess unsuspected by the doctor. Prof. J. W. Bigger, M.D., dean of the faculty of physic, Trinity College, Dublin, gave evidence, as Prof. Blacklock

had done, of the systematic precautions at the company's laboratories at Beckenham, the admirable checking and recording arrangements, and the expert qualifications of the technical staff. There was a difference in the appearance of a suspension of tubercle bacilli and T.A.F.; even when really well made the suspension was somewhat granular; if the bottle had been standing for some time, the T.A.F. formed a rather bulky floccular layer at the bottom and the tubercle bacilli a very dense, even, compact layer; no one who looked at the two a couple of times could possibly confuse them. Cross-examining counsel sought to put to Prof. Bigger the possibility of a bottle of T.A.F. being contaminated at the laboratories and the contamination being held under the rubber cap of the bottle until pressure was applied to it by the doctor. The court refused to allow the questions; the president said the plaintiffs had given no evidence of this possibility on which the jury could hang a finding; it was accepted that there was enough phenol in each bottle of T.A.F. to kill tubercle bacilli in six days. Further evidence was given by the heads of the filling and packing departments of the company as to the intensive care and continual precautions taken in the production of the prophylactic. Additional medical witnesses included Dr. J. C. Saunders, medical officer of health for Cork City, Dr. C. J. McSweeney, medical superintendent of Cork Street Fever Hospital in Dublin, Dr. R. A. O'Brien, director of the Wellcome Foundation laboratories since 1914, Dr. Robert Collis of Dublin, and Mr. H. L. Barniville, senior surgeon to the Mater Hospital.

After counsel's speeches the president summed up. The onus was on the plaintiffs, he said, to establish their case. If the evidence left the jury in doubt between two possibilities—one, that the infection came from the bottle as it came from Beckenham; the other, that it came from the bottle being infected by something that happened while it was in Dr. McCarthy's hands—if they could not make up their minds between those two alternatives, then the plaintiffs must fail. He put to the jury the question which embodied the allegation on which the plaintiffs relied—Did the Wellcome Foundation negligently issue a bottle containing live tubercle bacilli in suspension for use instead of a bottle of T.A.F.? The jury, as already stated, answered in the negative, and judgment with costs was entered for the Wellcome Foundation.

MENTAL NURSING

THE Royal Medico-Psychological Association and the medical section of the British Psychological Society spent the evening of Feb. 22, with Dr. DENIS CARROLL, president of the R.M.P.A., in the chair, considering the question of mental nursing from many aspects.

THE CONSULTANT'S ASPECT

Dr. R. D. GILLESPIE distinguished two classes of mental patients: psychotics who were ill enough to be placed in mental hospitals; and psychopathic or psychoneurotic patients who had to be treated in their own homes or in single care, often under conditions of greater difficulty. Training devoted entirely to the nursing of cases of the first class was apt to be inadequate to the care of cases of the second class. In his experience, the best nurses for the psychoneurotic patient had never had any training in an approved mental institution. Their qualities were intelligence above the average, inborn understanding of human nature, vocation, initiative in devising the right occupation for their patients' needs, patience and perseverance—in short, "personality." The training of the mental nurse should cover the psychopathic type of case, and the staff of a mental hospital were not likely to come into contact with many of these cases until its organisation was extended to psychiatric outpatient departments in general hospitals. The behaviour of the two types of patient was different. Although the incidence of the second class was probably higher, the R.M.P.A. handbook on mental nursing contained only three pages on the psychoneurotic patient and no mention of the psychopathic. Unless the medical officer had similar training, he was not likely to be able to teach the management of these patients to his staff. Nurses might well be sent for periods of training to hospitals such as the Cassel, the Maudsley, and the Lady Chichester. The Cassel Hospital had a scheme for training general nurses for a year in the nursing of psychoneurotic patients. Re-education must be based on fundamental principles, and nurses trained to carry it out were indispensable. In psychotherapy they gave great help in obtaining the patient's confidence and inducing him to speak. The nurse could also, under supervision, help to interpret the patient's behaviour to himself and to replace faulty mental habits by good ones.

THE MEDICAL SUPERINTENDENT'S ASPECT

Dr. A. A. W. PETRIE (Banstead) traced the evolution of the mental nurse and of the examination system held by the R.M.P.A. He suggested that the educational course should be divided so that the General Nursing Council were responsible for the preliminary and the R.M.P.A. for the final examination. The report of the departmental committee on nursing might point the way to a wider portal and perhaps bridge the gap between mental and general nurses. It was most important to enrol educated women, but the present rewards and conditions were not sufficiently attractive to enable the mental service to compete with the general hospitals, especially as the municipal hospitals were improving their conditions. The presence of chronic patients deterred recruits from entering the public mental hospital, and private practice did not offer the same amenities or pensions. The R.M.P.A. handbook was an ambitious work, and had grown up from small beginnings. It had to deal with much matter in a small compass. Opinions differed on whether the handicrafts teacher should be a nurse or a separate kind of worker. Female nurses were almost essential for certain conditions in male patients. To send general nurses for six months to a mental hospital could do nothing but good, but at present the matrons of the big teaching hospitals were against this plan. The educated type of psychoneurotic required an educated type of nurse. Assistant nurses should be trained workers, for otherwise women would seek the assistant rank to avoid training. If intelligent women, trained in general nursing, could be interested in mental nursing and trained for short periods in a mental hospital or a clinic, the ideal supply of mental nurses would be much nearer fulfilment.

Dr. NOEL HARRIS (Woodside) considered that the object of training should be the nurse who was equally proficient in dealing with both the psychotic and the neurotic. The martinet type of nurse was hopeless for mental patients, as she tried to make the hysteric face reality without establishing the all-important rapport which made for confidence. Some assistant nurses who had failed to pass their

examinations were of the motherly type, which was better but might fail to exercise the right kind of firmness. The amateur psychologist was a definite danger. In dealing with the milder psychoses or psychoneuroses the mental-hospital-trained nurses were the best, for they seemed more stable when anything went wrong. The best nurse had an intuitive knowledge of human nature and a way of making the patient feel as if she were going to help him; backed by a mental-hospital training, she was almost ideal. Male nurses were almost indispensable for some of the more difficult chronic patients, and even for some acute cases. The only alternative was the orderly system, which was said to work well in the army but could not easily be applied to the civil mental hospital. The orderly could hardly be expected to take the same interest in the work as a trained nurse.

The standard of education among students should be higher. He had been impressed with the number of girls he had met in the Student Christian Movement in hospital who had been anxious to take up work that they could feel was worth while. If the need of the mental hospitals was put to these girls and conditions could be made better, a large number of them might find their vocation in mental nursing. Some of the finest mental nurses were to be found in the religious sisterhoods abroad. Mental-hospital matrons should have the same administrative position as in the general hospitals and should engage their own nurses.

Some mental-hospital officers must take the blame for teaching psychology to nurses with a view to examination and not to their work with patients. A medical staff keen on the psychological approach would help the nursing staff to realise its importance. Some nurses were amazingly good at applying a little austerity or a little tenderness to a patient at exactly the right moment at a hint from the medical officer. Some hesitated to leave a mental hospital for special training because they feared that they would forgo superannuation time. With the increase of clinics, admission blocks and special hospitals for neuroses, and the solution of the superannuation difficulty, the mental-hospital nurse would come into her own and be able to nurse psychotics and neurotics equally well.

Dr. J. IVISON RUSSELL (North Riding) declared that medical officers were killing their nurses with criticism. For improvement of the service, some praise of her work and elevation of her status were essential. Many women of good credentials joined mental-hospital staffs, but left when they saw what the service was like. Those who remained and did well were, however, of exceptional quality. The hospitals, by taking advantage of the industrial depression, had built up an incredibly good staff of male nurses. The status of the male nurse should be improved so that, when economic conditions became better, recruiting would not fall off. The mental hospitals could get enough nurses if they would raise their status and cause the public to respect them more. THE LANCET Commission on Nursing had said that the mental nurse should be supervised by general-trained nurses in order that the early signs of physical disease might not pass unnoticed. On the other hand, if there was one department of nursing in which the mental nurse had an advantage, it was in her experience in detecting the beginning of a physical illness. The general-trained nurse did not have the same opportunities of learning those signs.

The recruitment of labour in an industry depended on its prestige. At present the mental nurse was thought of as the kind of person who cleaned the hospital. Mental nurses divided themselves—though superintendents would not accept the classification—into two classes: nurses and nurse-maids, according to their duties for the time being. Dr. Russell submitted that there was no reason why a maid should not be in charge of patients—e.g., to see that they did not climb the garden wall. If some of the excellent young women who for one reason or another did not take their certificates could be used for these duties, they would not be terrified into resignation by fear of examinations, and might have their own grades of promotion—e.g., to housekeeper in charge of the nurses' home or the parole ward. Under that system only 60 per cent. of the ward staff would be nurses; probationers would be few, and would be properly instructed and freed from the domestic duties which kept many girls away. Mental hospitals would then be required to provide higher training facilities. The technique peculiar to mental nursing was occupational treatment, but only a small proportion of the staff could be properly taught, and when a nurse learned the technique she ceased to be called a nurse. If mental nursing were elevated to its proper place young women who trained as occupational therapists would be proud to complete the training course for a nurse. A surplus staff could be kept for the nursing of private patients who entered homes within a local authority's area, and the time they spent could be counted for pension. He believed that this was permitted by the Mental Treatment Act, 1930.

GENERAL DISCUSSION

The PRESIDENT did not agree that all private mental nursing should be done by nurses trained in mental hospitals. His own experience of male private mental nurses had been little short of disastrous. For borderline cases personality was more valuable than training. Agencies charged a higher fee for mental nurses with general training, but the consulting psychiatrist was lucky if these could give a hypodermic injection capably. He should have his own panel of nurses whom he knew to be generally competent. Psychotherapy by nurses was difficult to teach and to control, and the results of its unskilled use might be deplorable. Nurses should be chosen for it who had an intuitive gift for saying the right thing at the right moment and could tolerate the anxieties of the particular patient.

Dr. C. H. ROGERSON maintained that the best type of nurse for neurotic patients was the one with a general-hospital training. The Cassel Hospital was interested in training the general nurse in an understanding of psychiatric problems. For this training the nurse needed exceptional intelligence and resource, but an important addition to her knowledge was an understanding of the mental mechanism of patients so that she could view their problems as those of illness and not of contrary and difficult people, and not be irritated and disturbed by them. This knowledge would help her enormously in dealing with ordinary patients, who had many neurotic characteristics.

Dr. HENRY YELLOWLEES remarked that in an institution where 80 per cent. of the work consisted in giving the patients occupation the person in charge must take an active part in the occupation, even if it consisted in keeping the premises clean. The occupational therapist did not differ from the nurse-maid. The qualities of the ideal nurse were just those which training could not give.

Dr. A. J. PALMER said that in mental hospitals emphasis had been laid exclusively on training for treatment, although the nurse would not in practice carry out treatment, rather than on training in clinical observation. At Woodside ward-classes were held in the nurses' home to teach accuracy of observation. He did not like nurses to help in treatment. The valuable training of the matron and higher grades should not be wasted in administration.

Dr. W. J. T. KIMBER said that at the beginning of a nurse's training at Hill End she was conducted round all the departments of the hospital and had their working explained, so that she could understand the aims of the hospital and her part in it, and how the other officers and departments assisted and supported her. The nurse's social background should approximately coincide with that of her patient. This need might explain the difficulty of obtaining a good nurse in private practice, where the patient might have more intelligence than the nurse. To be of higher social standing than the patient, however, also put the nurse at a disadvantage.

THE AIR-RAID

A series of articles on medical organisation and surgical practice in air attack by
P. H. MITCHINER, C.B.E., T.D., F.R.C.S., *and* E. M. COWELL, D.S.O., T.D., F.R.C.S.

IX—CHEST WOUNDS

SEVERAL types of wounds of the chest may be found among casualties due to air-raids: (1) crush fractures of the ribs from falling masonry, (2) bomb wounds from shrapnel or fragments, (3) bullet wounds from machine-guns of low-flying aircraft, (4) shrapnel from anti-aircraft guns, and (5) fatal laceration of the lungs from "blast." In Spain the mortality from chest wounds is very high, especially in women and children. Apart from early closure of the open pneumothorax and blood-transfusion, but little treatment has been carried out, and operation has not been attempted to any great extent up to the present time.

As the result of experience gained in the war 1914–18 the following types of chest wound were recognised: (1) injuries to the chest wall, with or without damage to thoracic contents, (2) perforating (with wounds of entry and exit), (3) penetrating (with wound of entry alone), and (4) abdomino-thoracic. The fact that wounds due to bomb fragments are often multiple must not be forgotten; the missile that has perforated an arm may lodge in the chest, and the man brought in with a bomb wound of the leg may also have a penetrating chest wound.

THE INJURIES

The *parietes* may be damaged extensively by falling masonry. Such wounds are serious; fractures of the ribs and sternum may be complicated by damage to the spine (fracture-dislocations or crush fractures). Early radiography is essential. Apart from the application of strapping, bandages, or plaster-of-paris, treatment by rest, morphine, and oxygen is indicated. Traumatic asphyxia may be met with, and the doctor should remember the possibility of this condition. An oxygen tent affords the greatest relief to the urgent dyspnœa. Evidence of internal injuries, such as hæmorrhage, ruptured bronchus, or collapsed lung, should be sought for. Surgical emphysema commonly accompanies crush injuries of the chest. The condition is alarming to the patient but in itself is not serious. It must not be mistaken for gas gangrene.

In a *perforating* wound the wound of entry may be a small opening, sealed by blood-clot. The wound of exit is usually larger and is perhaps bleeding, owing to the greater damage done to the chest wall. The amount of internal damage done may be estimated from the line taken by the missile. At the wound of either entry or exit the rib may be comminuted and the intercostal vessels may be lacerated and still bleeding.

In a *penetrating* wound there is a wound of entry only. If the wound of entry remains open and allows air to be sucked in with each respiratory movement, the homolateral lung rapidly collapses, the chest fills with blood, and the mediastinum is drawn over towards the wounded side. These changes are illustrated in fig. 1. The condition is that of an open *pneumothorax*. If the opening is closed, even temporarily, the lung begins to expand again rapidly, and the urgent distress of the patient is relieved.

The pleural cavity rapidly fills with blood, which becomes defibrinated owing to the continual movement of the lung. Shreds of fibrin adhere to the surface of the lung and diaphragm. The lung may be damaged in one or more lobes. It rapidly collapses as the *hæmothorax* develops; hence bleeding is checked. The wound of entry into the lung is readily found (sometimes there is a large superficial laceration), and the wound of exit may be seen, or the foreign body may be found under the pleura. In early cases the track of the wound, when opened up, is seen to be full of necrotic material, including fragments of rib, shreds of clothing, and perhaps the bullet or bomb fragment. A severed vessel may be found and sometimes a cut bronchiole. The lung tissue immediately surrounding the track is infiltrated, firm to the touch, and hepatised. Later, sepsis and pneumonic areas develop, and subsequently abscess, empyema, or gangrene. The surface of the diaphragm becomes covered with shreds of fibrin, and on it may be found fragments of rib, foreign bodies, and other septic material. Search should always be made for wounds of the diaphragm. The pleural cavity may be full of air (pneumothorax) or a mixture of air and blood (hæmopneumothorax). A closed pneumothorax may result from damage to the bronchus or a finer branch, or may result from the development of gas in the presence of an anaerobic infection. The open pneumothorax is produced when the wound allows free access of air.

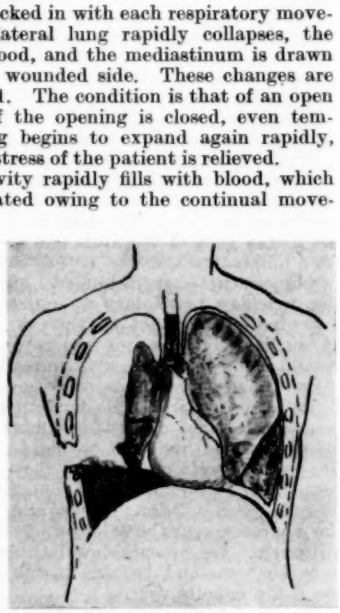


FIG. 1—Diagram showing effect of open pneumothorax on the lung. (After Sauerbruch.)

Elliott and Henry (1917) in an examination of 500 cases of chest wounds found 195 infected, including 87 with anaerobic bacilli. The *infection* is generally carried in by the missile, but anaerobic organisms may come from the surface wound. When introduced the anaerobes grow readily in the blood present in the pleural cavity. For the first twenty-four hours the sepsis remains localised to the wound track, and conditions are favourable for operation.

Symptoms.—A person suffering from a chest wound immediately exhibits considerable distress. The dyspnœa becomes severe, and there is usually a painful cough and possibly hæmoptysis. When there is an open pneumothorax, the to-and-fro suction sounds become most alarming to the patient. In a few hours the signs of shock, with or without hæmorrhage, supervene, and the patient becomes cold, blue, and pulseless. Signs of sepsis and inflammation do not appear as a rule for twenty-four to forty-eight hours.

Pierre Duval (1917) gives the *mortality* as 25–30 per cent. in the dressing-stations. These deaths result from bleeding and mechanical asphyxia. In the casualty hospitals the mortality is still 18–20 per cent. Death is early in half the fatal cases. The seriousness of the condition varies with the nature of the missile as well as with the nature of the wound; thus, bullet wounds give a mortality of 2–12 per cent., shell wounds 16–28 per cent., perforating wounds 21 per cent., and penetrating wounds with retained foreign body 30 per cent. In 60 per cent. of the fatal cases death comes in the first forty-eight hours. Open wounds are said to be twice as fatal as closed wounds.

TREATMENT

The successful treatment of these wounds depends largely on the administrative arrangements. Early recognition is essential, and priority evacuation to special centres is the ideal. Immediate first-aid treatment and rapid transport in the Fowler position should be encouraged. At the dressing-station shock should be prevented and an open pneumothorax closed by plugging or skin suture. At the hospital an experienced physician should consult with the surgeon on the question of operation. If operation has been decided upon, the case should be dealt with only by surgeons possessing the special experience which chest surgery demands. Such surgery should be carried out with a team trained for the work; this team includes the anæsthetist, assistant, radiologist, and skilled nurses in special wards with oxygen tents.

The general condition of the patient is studied and the presence of other wounds noted. In all cases the blood-pressure is determined, some cases the blood-volume and hæmoglobin percentage also. Radiography, if the patient can stand it, is helpful.

In examining the chest the surface wounds are carefully observed, and the time that has elapsed since the wound was sustained is taken into account. Information as to the presence of hæmothorax, pneumothorax, or collapse of the lung can be obtained by physical examination. The position of the heart should be accurately ascertained.

Prof. Gask, writing in 1917 on his experience of 500 cases, gives the following indications for early operation:—

(1) A ragged wound of the soft parts.
(2) A compound fracture of ribs.
(3) Bleeding from the parietal wound.
(4) Suction of air into the pleural cavity.
(5) Retention of a large foreign body in an accessible position.
(6) Pain due to fragments of rib scratching the lung on every respiration.
(7) Rapidly increasing pneumothorax due to a valve-like opening into the pleural cavity, which allows air to be sucked in and prevents its expulsion.

Pierre Duval (1917) says, "Leave bullet wounds alone; always operate on all shell wounds." We agree with this dictum from evidence based on our own experience.

If none of the above-mentioned indications are present, the case is dealt with on the usual medical lines, and a careful watch is kept for complications. Hæmothorax is aspirated only if producing inconvenience, and a needle is inserted if infection is suspected. Apart from collapse due directly to the effusion of blood, massive collapse occurs in about 10 per cent. (Gask 1917) and contralaterally in 1 per cent. Pneumothorax is usually absorbed rapidly, but, when it is due to anaerobic infection, operation is indicated. Surgical emphysema is not uncommon and usually clears up rapidly.

FIG. 2—Rib-spreader (Schaerer's pattern).

As a result of the pioneer work of Pierre Duval, Gask, and others, the previous reluctance of surgeons to operate on chest wounds has been replaced by confidence and satisfaction with the results gained. Once it was shown that the chest could be safely opened and the lung could be directly handled, it became obvious that wounds of the lung should be treated on the same lines as any other infected wound containing septic material and an irritating foreign body.

The following special instruments are required:—

(1) Doyen's periosteal rib-elevator and shears.
(2) Small 1 cm. trephine and Cowell's double-bladed thoracotomy saw (Mayer and Co.).
(3) Powerful rib-spreader (Schaerer's pattern) (fig. 2) or Tuffier's *écarteur*.
(4) Duval's lung-forceps (Collin, Paris) or Cowell's peritoneal forceps (Mayer and Co.).
(5) Symonds's round-bodied fish-hook needles.
(6) Good illumination is essential, and a head-lamp may be useful.

Local or regional anæsthesia is recommended by some surgeons. The patient has usually received a heavy dose of morphine beforehand and undergoes gas-and-oxygen anæsthesia well. It is not necessary to raise the intrapulmonary pressure. The lung is already collapsed, and attempts to inflate it only hamper the surgeon.

OPERATIVE TECHNIQUE

After radiography, if circumstances permit, and probably a previous blood-transfusion, the operation is carried out in the following steps:—

(1) The superficial wounds are excised in the usual way, and a decision is made whether to open the chest through one of the original wounds or through a new incision. The optimal access is obtained by an antero-external incision along the third, fourth, or fifth rib, from the edge of the sternum to the mid-axillary line.

(2) *Thoracotomy.*—Le Fort's antero-external flap, including incision of one or two costal cartilages, is not recommended. The chest is best opened by either resecting a rib or sawing it along its long axis for four or five inches, according to the size of the surgeon's hand. If the latter method is used, a centimetre trephine makes an opening through which the double-bladed saw divides the rib forwards and backwards. The cut is made so that the edges of the divided rib are bevelled. The ends of the sawn rib are cut across with forceps, and the opening is ready for the introduction of the spreading forceps. The advantage of this method is the facility with which the chest is shut; the pleura which adheres to the divided portions of the rib is closed by tying these together like lacing corsets.

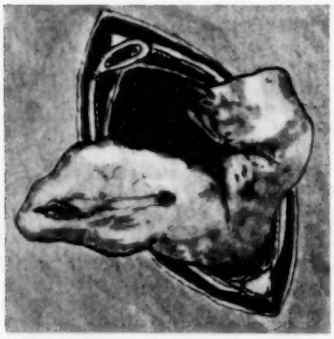


FIG. 3—Exteriorisation of lung. The rib has been split and each half widely retracted by a powerful rib-spreader (not shown). The lung has been drawn out and will be packed off while the toilet of the wound track is made. (After Duval.)

(3) *Rib-spreading.*—With one of the powerful spreaders already mentioned the opening is made wide enough to admit the hand.

(4) *Exteriorisation of the lung.*—The first portion of the lung that presents itself is seized with the lung forceps and drawn up into the wound. It is then covered with gauze, firmly grasped, and drawn out on to the surface of the chest. Each lobe can be delivered and examined in turn if necessary after separating any adhesions (fig. 3). When the wounded parts have been found, the opening into the chest is closed by packing round the exteriorised lung, to prevent the free entry of air. No attempt is made to deal with any fluid in the pleura at this stage.

(5) *Track toilet and removal of missile.*—The wound of entry into the lung is examined and then cleaned by gentle swabbing with gauze, any ragged pieces of tissue being snipped off with curved scissors. Necrotic material is swabbed out from the track, and any foreign bodies, such as fragments of rib, missiles, or shreds of clothing, are gently removed. If the bomb fragment is felt under the pleura on the opposite side of the lobe, a separate incision may be made, but this is not generally necessary. In the case of a through-and-through wound, gentle cleansing by a gauze wick may be done. Sometimes a whistling bronchiole may be tied off or a bleeding vessel ligatured.

(6) *Suture of the lung.*—There is an area of infiltrated tissue round the track, and no attempt is made to suture this. The surface of the lung, however, must be closed to shut off the wound from the pleural cavity, internal drainage of the wound being provided naturally through the branches of the bronchus. Lung tissue holds sutures well, and no difficulty is found in tying them off. Medium-size catgut is quite satisfactory. The lung is now returned to the thorax.

(7) *Pleural toilet.*—Any fluid present is gently removed by a suction apparatus or by mopping, care being taken to remove all clots and fibrin adhering to the diaphragm or to the parietes or foreign bodies that may have fallen loose into the diaphragmatic recess. Shell fragments may be seen fixed in one of the vertebral bodies, or wounds may be seen in the diaphragm suggesting an abdominal injury as well as a thoracic one.

(8) *Closure of the wound.*—The spreader is removed and the chest closed in layers. Pleura is, unlike the peritoneum, difficult to suture by itself, and unless the rib-splitting method has been used, is included with the intercostal muscles. When the rib has been excised it may be necessary to pass stout sutures round the two adjacent ribs, and in any case care must be taken to make the ends of the wound air-tight. The second layer, consisting of the pectoralis or other muscle, is then sutured, and finally the skin is closed. No drainage is necessary.

(9) *Aspiration of air.*—The discomfort of the patient after operation is lessened if the pleural cavity is emptied of air. This is generally drawn out by a large syringe with a two-way tap. If Potain's aspirator is used a negative pressure may be set up, causing bleeding of the lung.

(10) *Application of dressing.*—In order not to impede the movements of the sound side of the chest, it is advisable to retain the dressing in position by unilateral strapping. If a many-tailed bandage is applied it must not be put on tightly.

RESULTS

Chest operations are among the most satisfactory of the surgical procedures carried out for war wounds. It is possible to open a chest, remove a foreign body and close the chest in 15–20 minutes. The after-treatment includes careful watching for complications. The nursing details will be given in a later article.

Duval claims that in one series of 33 selected cases operated on without indications of urgency all recovered. The figures given for the severer cases tell a very different story. In a series of 161 cases the mortality was:—

	Cases and per cent.
Died on admission (no operation)	13 (23)
Immediate operation	29 (44–8)
Early operation	17 (0·0)
Medical treatment	102 (1·0)

In Gask's series 104 cases were operated on with a mortality of 20·2 per cent., and 206 cases were treated medically with almost the same result—21·07 per cent. The first series were all serious cases, the second much less serious wounds.

ABDOMINO-THORACIC WOUNDS

Gordon Taylor, writing on this subject in 1919, states that abdomino-thoracic wounds constitute 9 per cent. of chest wounds and 12 per cent. of abdominal wounds admitted into a casualty clearing station. The early mortality-rate in France was very high—about 80 per cent.—and as a rule only those survived in whom solid viscera alone were damaged. When improved methods were adopted, a total recovery-rate of 64 per cent. was obtained.

The incision advocated by Pierre Duval in 1917 is generally followed when thoraco-laparotomy is indicated. The patients are generally moribund on admission to hospital. Active resuscitation methods, including blood-transfusion, alone make surgery possible and thereby offer the patient a chance of recovering.

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GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A PART-TIME PROFESSOR

I

IN recent years the part-time university chair in medicine has been strongly impugned. Its critics have asserted that it is both a sinecure and an anachronism. It is suggested that the sole duty assigned to its occupant is to deliver each session a course of systematic lectures in medicine; and even this is considered by some no longer necessary, for they assert that the student can obtain more detailed and accurate information from his textbooks. The professor plays no special part in clinical teaching for this he shares with his hospital colleagues. Moreover, the fact that he has chosen Mammon, as typified by consulting medicine with its "glittering prizes," is evidence that he lacks not only the spirit of self-denial but also the intellectual depth and outlook which are necessary for research. Finally, the university is called upon to refrain from enhancing the market value of an already prosperous consulting physician by conferring on him, in exchange for the lectures he delivers, the title and dignity of professor.

However accurate these allegations might have been in the past (and I can neither confirm nor deny them from my personal knowledge) they are entirely unfounded today. The holder of a part-time professorial chair in medicine willingly and adequately shoulders its many responsibilities.

He teaches the *current* knowledge of his subject. This entails his keeping abreast of recent advances by reading the literature and attending scientific meetings. No textbook can replace his lectures. Rapidly advancing knowledge leaves the textbooks well behind and no text can be as vivid as the lecture illustrated and annotated by the speaker's own experiences. Most universities have established departments of medicine with clinical and experimental laboratories. In these the professor endeavours, not only by his own efforts but by stimulating the curiosity of his students, to extend the frontiers of medical knowledge. As the head of his department he must direct its activities, both routine and research; he must engage its personnel; and he must guard, so that it is spent to its greatest advantage, its limited and all too meagre income.

He is also, by virtue of his chair, a member of a university, which is no mere technical school. It is a society endeavouring to prepare its youth for a mode of life as well as a means of livelihood. And so his administrative functions cannot be confined to his department and faculty; he must play his part in the deliberations of the university senate. With increasing recognition by the university of its responsibilities for the physical well-being of its members it is natural that the professor of medicine should be called upon to supervise medical examination schemes, and the like.

And he has public duties. In part these are the direct outcome of his university post; for example, as an examiner for university degrees, he helps to prevent those who fail to reach the necessary standard of knowledge from being registered as medical practitioners. But his expert advice is eagerly sought in the service of the community and so he is expected to become an active member of innumerable committees, commissions and the like. To sum up, his duties are not only teaching, research and administrative but also advisory.

* * *

It is not surprising that the efficient fulfilment of these multifarious duties of the chair should have been regarded as possible only by one prepared to devote the whole of his time to them. Hence many whole-time professorships of medicine were instituted in this country after the war. There was, however, one consideration above all others which led some universities to reject the principle of whole-time clinical chairs. It was known that the older test—namely, that of proved worth in clinical medicine, as measured by success in practice and clinical teaching—had provided professors not only of deep medical learning and experience but also of broad general culture. It was recognised that however important were technical skill and research ability, the most essential requirement of a professor of medicine was that he should train efficient practitioners and that this demanded not simply knowledge but the wisdom, sympathy and understanding which are acquired only by intimate and constant contact with men and women in their own homes. The ill patient, in other words, is not simply a scientific enigma but a human problem, a fact too frequently overlooked in these days when medicine and its kindred sciences are advancing with well-nigh uncontrollable speed. In the hands of a "scientific" physician, the human being who is ill may undergo so complete an audit of his bodily activities that death may be regarded by him as a welcome release from the assaults to which he is subjected in the name of "clinical investigation." Against this attitude towards disease the professor of medicine, who is a practising physician, forms the strongest bulwark.

* * *

If it be asked why the successful consultant should agree to undertake the onerous duties of a chair, the cynic will doubtless answer that the primary consideration is the accompanying financial reward. But the direct emoluments of a part-time chair are quite negligible and for the most part expended by the professor in making good departmental deficits on apparatus and in subsidising additional research.

If proved success be accepted as establishing a claim to the chair then the indirect reward which may result from the increased practice believed by the critics to follow the holding of a chair will be most evident in those who are the less satisfactory aspirants. The most suitable candidate for such a chair will already have secured a practice as large as he desires and the additional duties of the chair can but reduce the time available for private practice, for leisure, or for both.

There are two main incentives to accepting a part-time chair. One is pride in achievement (call it vanity if you will)—the attainment of one's ambition to be the recognised head in a medical centre of one's

branch of the profession—the "leader" instinct. But this is far from being an ulterior and entirely selfish motive; a similar gibe might be aimed at any public figure, be he prime minister or city alderman. The other is based partly on the pleasure some find in teaching and partly on the altruistic motive of using one's talents for the benefit of one's fellow men. Successful teachers and lecturers are born, not made, just as some men have an innate genius for research and others are capable only of those routine investigations which show no original flair. Herein lies the crux of our whole problem. What relative importance should be attached to teaching ability and to research achievements in deciding by whom a chair in medicine should be held? As Newman has observed in the preface to his *Idea of a University*, "to discover and to teach are distinct functions; they are also distinct gifts and not commonly found united in the same person." It might then be thought that the proper solution to the problem would be to divorce clinical teaching from clinical research and to establish separate chairs in these subjects, the latter conforming to the "clinical science" of Lewis and not to purely experimental and laboratory investigations bearing only a remote relationship to clinical problems. I believe, however, that although there should be a separate chair of clinical science to be held by a man of proved worth and achievement in clinical research (and carrying a salary sufficiently attractive to the best man) it would be a profound mistake to confine the duties of the professor of medicine to teaching and to withhold from him the opportunities for research. For clinical problems present themselves in somewhat different ways to the practising physician and to the research worker. In the final analysis it is the practising physician who is more likely to recognise new disease types—for example, epidemic encephalitis, psittacosis, and the like. His research colleague will probably throw light on the nature and causative factors of established clinical syndromes.

It would doubtless be sufficient if there were placed at the disposal of the professor of medicine the full armamentarium of the laboratories of the ancillary sciences—bacteriology, biochemistry, &c. The difficulty here, however, is that the heads of these departments have their own problems and only limited resources of personnel and money with which to pursue them. At the moment, therefore, we must carry on with our inadequate medical research departments in the hope that one day greater public generosity and increased governmental grants, together with helpful and unselfish coöperation between the various departments, will enable the professor of medicine to make use of them all for the common good. For it is incumbent upon every university teacher to pursue research. The first principal of Owens College, Manchester, Mr. A. J. Scott, said in his inaugural lecture, "He who learns from one occupied in learning, drinks of a running stream. He who learns from one who has learned all he is to teach, drinks 'the green mantle of the stagnant pool.'"

The practising physician faces, day in and day out, novel problems demanding both knowledge and the research spirit; each patient he sees differs in some way, however small, from all other patients he has ever seen. Sometimes he solves their problems, but even his failures are not without reward if they bring a spirit of humility and the discipline of the mind which this engenders.

The part-time professor of medicine is an indispensable link in the chains both of medical teaching and research.

* * *

After this *apologia pro vita mea* and lest my "sententiousness and ponderosity" has incurred Horderian censure let me add two lighter notes.

The recent revival of "The Doctor's Dilemma" at the Westminster Theatre led me to re-read this play. I find Shaw describes Mr. Cutler Walpole as "a man of 40," and then makes him say, "I have been a surgeon and a consultant for 20 years." *Aliquando bonus dormitat Shavius!*

In one of the answers to an examination question on "pneumothorax" which I set a few weeks ago, the well-known coin-sound was referred to by one student as "bruit d'aryan." But is not this phrase more appropriately applied to the music of a modern German band?

MEDICAL PEACE CAMPAIGN

FOLLOWING the second annual general meeting of the Medical Peace Campaign on Feb. 22, Prof. J. A. Ryle, the president, gave some account of the present status of the campaign and of its aims for the future. Doctors were aware of the dysgenic influences of warfare; but we are, he said, now too close up to possible emergencies for the quiet development of an anti-war policy—and for that reason the campaign was devoting itself rather to preparedness in a medical sense. The work of the medical profession is, he said, pacific and humane at all times. The three main lines of activity for the immediate future were these: (1) Some attempt to increase the membership, now 200 to 300, and to establish contact with the medical profession in other countries by the circulation of a manifesto, to be broadcast throughout the world. He mentioned with approval the action of the Balkan Medical Union which had recently issued through its president, Prof. A. M. Ozden, such a manifesto. (2) Some thought for civilian medical service in the event of war. He had misgiving about the present organisation, for so little had been done to take the medical profession into its confidence. But expert advice should be available from medical men "not yet senile" who had had experience in designing casualty stations and in arranging for the segregation of various types of casualties. Some sort of general staff to deal with supply and evacuation should be more efficient than any committee of the Ministry of Health. (3) Some attention to the urgent question of the health and feeding of masses of refugees. Could not doctors who were themselves refugees be given the opportunity of such service, which might lead on to a more general plan for mobile assistance in times of catastrophe. The campaign, he went on, would remain most effective if it kept its policy as medical as possible; only as medical men could its members speak as experts. He was, he confessed, a little depressed by the lack among doctors of positive action, part no doubt of the general inertia and atony prevalent in the country; surely the medical profession should have plans of its own ready in case of breakdown of government plans. We are, he said, aware of our mission and the principles are so simple. After some general discussion Dr. Janet Vaughan spoke of the food situation in Spain referred to in a memorandum issued by the Committee Against Malnutrition. Although some might feel that circumstances had made this leaflet out of date, it did, she thought, provide a useful analogy for the feeding of large numbers of people anywhere in time of need. Since the last war the science of nutrition had advanced so much as to make it urgent for doctors to be instructed in the principles of nutrition as we now know them.

LETTERS TO THE EDITOR

MEDICAL FORESIGHT AND A.R.P.

SIR,—Architects and civil engineers have rendered great service in passive defence by using knowledge of their own materials (concrete, iron and layers of earth) to inform the public of the probable degree of security obtainable by the use of them. In particular, the now famous Finsbury exhibition has shown us how to think in terms of quantity of danger and also to assess protection in quantitative terms. This is valuable for two reasons: it guides policy on rational lines, and it tends to diminish the swing of belief between the almost equally foolish extremes "complete protection" and "inevitable danger." Could not the medical profession with its specialised knowledge of its own materials make an analogous contribution to passive defence? Would it not be possible to make a survey from the medical point of view, beginning with one area—say Finsbury, since the engineers and architects have already done their work well there? This would apply our general knowledge of medicine to intricate problems raised by the bombing of an area which, though healthy in time of peace, may be made medically dangerous by a raid through broken drains, defective water-supply and interrupted transport.

Such a survey would bring before ourselves as a profession the problems we may have to face; and, following the excellent example of the architects and engineers, we in turn could put before the public (whose coöperation after a raid will be essential) our detailed plans for their protection. It is important that measures should be taken in advance to check the spread of apprehension which would almost certainly arise if an urban population found its supplies of food and water suddenly curtailed and its sanitary system suddenly becoming a danger. However valuable it may be to think of A.R.P. in terms of nation-wide needs, bombs in fact hit certain spots. The object injured, whether a person or a borough, has arteries and nerves and an alimentary system. Those who live in places which may be hit want to know what to do beforehand for protection and what would need to be done next after a raid.

Of course such plans cannot be brought to perfection on paper. But the medical survey suggested should lead to a plan for dealing with injuries to the health as well as the limbs of the people, and should be made public, because by fore-knowledge of how to remedy evil the dread of it is lessened.

I am, Sir, yours faithfully,

Kent Terrace, N.W.1, Feb. 24. JOHN RICKMAN.

*** Dr. Rickman's suggestion was made at a meeting of the Medical Peace Campaign, of which a brief report is given on p. 638, and was welcomed there as a concrete plan on which the medical profession could bring their scientific training to bear on local A.R.P. problems.—ED. L.

BRONCHOGRAPHY

SIR,—I read with interest Dr. Philip Ellman's article on a method of bronchography in your issue of Feb. 25. His emphasis on the simplicity of the method will no doubt induce a number of your readers, without previous experience, to try it. I should like, therefore, to indicate briefly a few difficulties which may arise, and to make some criticisms affecting the details of the procedure.

In the first place, provided the patient's tongue is held well forward, I cannot see any advantage in the nasal method over the more usual one of dropping the iodised oil over the back of the tongue. In fact a little more cocaine must obviously be used in the nasal method to anæsthetise one nostril as well as the throat. When a 10 per cent. solution of cocaine is used, as advocated by Dr. Ellman, reactions occur even in patients who have shown none after a hypodermic injection of gr. 1/10. It is, in my experience, much safer to use Decicaine in a 2 per cent. solution. It should also be the endeavour of the operator to use as little anæsthetic as possible. In order to do this it is worth remembering that cocaine derivatives applied to a mucous surface take a few minutes to act. I know of a case where, through the failure of an inexperienced house-physician to realise this delayed action, half an ounce of the solution was used to secure anæsthesia with a fatal result. I have never used more than one drachm in any case, and often only half that amount.

I am, Sir, yours faithfully,

Harley Street, W.1, Feb. 24. L. P. E. LAURENT.

CONVULSION THERAPY

SIR,—I was interested in Dr. Gillespie's account of the feelings expressed by patients undergoing convulsion treatment as I have been collecting similar records for some time past. I have also found that the patient's sensations preceding the fit and his reaction to the treatment are variable, depending to a certain extent on the type and the chronicity of the mental illness. For instance, it is generally impossible to explain the rationale of the treatment to a regressed schizophrenic, and if he is of the paranoidal type he not infrequently includes the injection into his system of persecutory delusions. On one item, however, my findings do not agree with those of Dr. Gillespie. He states that "patients were mostly slow to attribute any improvement in their condition to the treatment." I on the contrary have found that wherever a good remission occurred, the patient invariably gave the credit to the injections. I will quote the example of a patient who described the premonitory sensations as "terrible, if she could die she would." Nevertheless she willingly continued being treated because "she hadn't felt so well for years" as a result of the first nine injections. Another patient, who made a good remission, wrote home as follows: "I am having injections. . . . I've had three already, the last one I had to stay in bed the whole of the day, but that one did me most good, it has put new life into me and I am eating ever so well."

I employ triazol as the convulsant and I wondered whether this might account for the difference. Perhaps other workers using triazol might be able to give relevant information on this point.

I am, Sir, yours faithfully,

I. ATKIN.

Park Prewett Mental Hospital, Basingstoke, Feb. 17.

SIR,—Your leading article last week quotes Meduna as saying, "As regards enthusiasm, I must confess that I am not myself enraptured with the cardiazol treatment, but for the present I do not know anything better that I can recommend. In any case I regard it as my duty to work as hard as I can at devising a procedure that obviates the apparently

violent shock to the patient, while utilising only the biochemical processes to which the shock gives rise." I have been working on this very point for some years, and for the last five years have used a method which I believe may be exactly what is meant by Meduna's last sentence. I realised that in the treatment of schizophrenia, in all the methods mentioned or tried, both old and new, whether it be a trap-door or insulin, shock is a common factor to them all, and a chemical substance always associated with shock is *histamine*. In fact histamine is not only present in insulin shock, but in every variety of shock, including anaphylaxis, surgical shock, the shock of acute intestinal obstruction, and the shock of extensive burns. I started to work with a mixture of histamine and insulin thereby believing I should get the same results by eliminating convulsions. So far the results appear to be much better than the convulsive methods. This method of mine has been the subject of a paper read by me to the Royal Medico-Psychological Association, has been published in the *Journal of Mental Science* for July, 1938, and has been used elsewhere with good results.—I am, Sir, yours faithfully,

HORACE HILL.

Laverstock House, Salisbury, Feb. 24.

FIBROCYSTIC DISEASE OF BONE

SIR,—Probably the most important feature of the case described by Drs. Robson and Todd is the fact that though the condition of the bones suggested hyperparathyroidism no lesion of the parathyroid was found on exploration. Actually the radiographic characters of the bones in parathyroidism—and for that matter in xanthomatosis—are characteristic and can be distinguished by the trained observer. This is well brought out in Mr. R. C. Elmslie's paper on fibrosis of bone and in L. Lichtenstein's excellent account of this condition (*Arch. Surg.* 1938, **36**, 874) under the title of "polyostotic fibrous dysplasia" in which he states that "in at least 6 instances patients were subjected to exploration for parathyroid adenoma because of the mistaken clinical diagnosis of hyperparathyroidism. In each instance the parathyroid glands were found to be normal in size and appearance. Two additional patients were needlessly subjected to röntgen irradiation of the neck under the same erroneous premise.—It is manifestly illogical to expect that a disease resulting from hyperfunction of endocrine glands would affect the bones of only one side of the body."

I do not think Dr. Parsons can blame the authors and others for failing to mention the case published by Dr. Frances Braid in the article he quotes; for the illustrations bear little resemblance to the appearances seen in the case under discussion. On the other hand, the serial X-ray photographs which I have made annually of the skeleton of this child do suggest that the appearances which she illustrated are the first radiographic signs of this malady and therefore worthy of credit and most careful study. When the patient was first sent to me from an infant welfare centre I regarded the condition as an unusual form of osteogenesis imperfecta, and I so recorded it in my Hunterian lecture. Every bony element of the skeleton was imperfectly ossified; compact and cancellous tissue appeared to be represented by a structure, resembling ground-glass, in which rounded or whorled non-calcified areas were visible; these I regarded as areas of cartilaginous proliferation. It is these latter areas which now appear to be assuming the characters seen in the adult cases of fibrous dysplasia. But whereas in the unilateral examples the skull sometimes presents a localised blister-like expansion of a segment which may be an inch or more in thickness from inner to outer periphery, the skull of this patient is uniformly thickened to a degree which suggests that cranial-nerve lesions may ultimately develop as in Albers-Schönberg disease.

I am, Sir, yours faithfully,

Birmingham, Feb. 27. JAMES F. BRAILSFORD.

EXCRETION OF INJECTED ANEURIN

SIR,—The paper by Prof. Marrack and Miss Höllering in your issue of Feb. 11, prompted Dr. Pyke to write the letter published on Feb. 18, which in our opinion is not quite fair. When Dr. Pyke states "that the results (of the thiochrome method) cannot be established within a range of less than about 500 per cent.," this is only true when all precautions are neglected, which is done neither by Prof. Marrack and Miss Höllering, nor by us, nor by the numerous other authors applying the thiochrome method to urine. Moreover the fact that Dr. Pyke expresses the error as per cent. of the lowest result obtainable clearly indicates that he aims at discrediting the method as much as possible.

We have never tried to conceal the difficulties of the thiochrome method and have always been anxious to make clear that it may be still much improved. Nevertheless, it is the only method of determination of vitamin B_1 adequate for clinical use. And when this is done as carefully and cautiously as was done by Prof. Marrack and Miss Höllering, warnings like those included in Dr. Pyke's letter seem quite superfluous to us.

We are, Sir, yours faithfully,

H. G. K. WESTENBRINK,
J. GOUDSMIT.

Copenhagen, Amsterdam, Feb. 24.

AS OTHERS SEE US

SIR,—Dr. Crisp's letter in your issue of Feb. 18, pointing out that the profession of a general medical practitioner is competitive, is of real importance. The work of the G.P. is the basis of medical treatment of the populace generally. There are many schemes proposed from time to time dealing with his work; and, in order that such schemes may be framed to the best advantage of all, it is most necessary that the true position of the G.P. should be known.

It is only when talking to these men in private that they are free to admit that their work is extremely competitive; though, as one gets on, there are many happy friendships that help out. Actually there are very few G.P.'s with an income of under, say, £1000 (gross) who are not seriously overworked—unless their income is extremely small. One seldom has time to do any serious reading or study, because one is so tired. One dare not risk losing a case, because it may lead to considerable loss of income. Quite a small slip, or inability to attend may lead to great loss. I bought a practice from a man who refused one night to attend a child; actually he was so overworked that he was absolutely unfit, and knew it. The child died, and the man was censured for not rushing off. In the same practice I was called out to a patient with serious hæmorrhage, and I was utterly unable to think, simply because I was so overworked. It is at such moments as that that one realises how strenuous the life may be; and one never dares to refuse on account of probable

loss of income. Besides the competition, there is also the risk of some legal proceedings. I omitted, once, to have a radiogram taken of a damaged little toe and had much difficulty in putting things right.

Actually, until established, one has to get into the way of assessing all patients from two points of view; will they talk and recommend; and will they be profitable? This is very wrong and wicked, but bills, rates and taxes come in inexorably.

The rate for panel work is extremely low; but it has two advantages. The first is that each panel patient has dependants; the second and greater is that the cheque arrives absolutely to date, on the same morning as the quarter's bills. Until one is established, accounts are the thought in one's mind more than any other; and so, one dare not risk losing a patient. On the credit side, I must add the fact that working in an area with far too many doctors in it, under conditions of the keenest competition, I never experienced anything that was not correct. To a great extent medical etiquette is absurd, but I am certain that it serves the very good purpose of making a serious competition tolerable—almost pleasant.

As I say, I know no G.P. who does not realise that his profession is highly competitive. I feel certain that it is only for the best that the true position should be known and recognised. I must add that it would not make the slightest difference to me, or my income, however much more competition there was. I have one foot in the grave, and no longer do much work.

I am, Sir, yours faithfully,

GENERAL PRACTITIONER.

London, S.W.20, Feb. 24.

REFUGEES IN FRANCE

SIR,—The British Red Cross Society have received a report from their representative, Major-General Sir John Kennedy, who is now at Perpignan inquiring into the question of relief for the Spanish refugees who have crossed the frontier into France. Thousands of them need relief of all kinds but the very urgent demand is for blankets, shirts, pyjamas, vests and pants. Money is required at once to provide supplies of these articles and the British Red Cross Society will be glad to receive donations to enable help in this direction to be sent immediately to Perpignan. Cheques, &c., should be addressed to: The Hon. Sir Arthur Stanley, British Red Cross Society, 14, Grosvenor Crescent, London, S.W.1 and marked "Spanish Relief Fund."

We are, Sir, yours faithfully,

ARTHUR STANLEY,
Chairman Executive Committee.

EBBISHAM,
Chairman Appeals Committee.

Feb. 23.

SIR,—Two months ago we launched an appeal for the purpose of helping doctors and nurses who have worked in Government Spain and who are now unable to return to their countries. We wish to thank all those who have contributed to the fund.

Most of the government medical personnel are now in the concentration camps in southern France. They are looking after the sick and wounded of the Spanish Republican Army, carrying on their work under the most difficult conditions. We had a letter from a Hungarian nurse, who says: "The conditions in the concentration camps are too ghastly to describe. We knew it would be bad, but we didn't imagine that it would be quite so bad. The food consists of one loaf of bread between five of us for 24 hours; our patients get no more. We are either going to die of hunger or else perish from the cold. There are no blankets, and we sleep on the open ground. Please send us all the help you can."

Needless to say, all the money we have collected has already gone to the south of France. It was merely a drop in the ocean, but it at least held out hope to our unfortunate colleagues and friends. We feel that it is our duty to do everything in our power to help the people who with such self-sacrifice and devotion abandoned their personal interests two and a half years ago and have since tirelessly persevered in their humanitarian work. We feel that your readers will not fail us if we ask again for contributions for that purpose.

All contributions should be sent to the hon. treasurer, Dr. C. F. Hill, 162, Kingston Road, Merton Park, S.W.19.

We are, Sir, yours faithfully,

C. F. HILL, L. CROME,
ALEXANDER TUDOR HART, G. B. SHIRLAW,
A. L. COCHRANE, H. BRADSWORTH.

Feb. 25.

SPEECH DEFECTS

SIR,—The remarks on p. 489 of your last issue, about stammering, its cause, and the suggested method of correction, will interest all who are concerned with speech therapy; but I cannot agree with Mr. T. C. Norris's theory that stammering is caused by speech being outpaced by thought. The following experiment will show that thought always outpaces speech:—

Read silently a column from a newspaper and time yourself very carefully. While you are reading you are also making mental comments and deciding whether you endorse or disagree with the various statements; thus your mind is working more quickly than your silent reading. Now read the same column aloud, using short phrases such as are used in conversation, and compare the time taken with that taken when reading silently. This experiment will give some indication of the relative speeds of speech and thought.

Mr. Norris advocates correction by thinking of the "sound" of each word. With this system I am in complete agreement, having used it for some thirty years, but it is not original, having been in continuous use for at least eighty-eight years. We all know that a stammerer, if musical, can sing fluently; the obvious reason being that he is concentrating on the "sound" of his words. In 1889 A. G. Bernard wrote "the slower and more deliberate his articulatory efforts, the more perfect they will be. In singing, where the movements of these parts are slower, and the notes are sustained, stammering rarely, if ever, occurs." In 1894 John Wyllie said: "When a primary demand for voice is made, as in song, the difficulties of the stammerer can be made to disappear," and "A general injunction to the stammerer that, in speaking, he should employ a full tone of voice is always of use to him."

These writers held the view that stammering was caused by word formation outpacing voice production and they unanimously advised concentration on voice control. The same advice is given in "Index of Treatment," editions 1932, 1936, and 1939.

I am, Sir, yours faithfully,

H. St. JOHN RUMSEY,
Speech Therapist and Lecturer at Guy's Hospital.

Feb. 27.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

ONE of the main topics in which Parliament is interested this week is the muddle in the A.R.P. arrangements. There has been and is very great activity in all departments, but there has been muddle—and continues to be. At the same time there is less than may appear; the apparent muddle is partly due to the unwillingness of the powers that be to tell the ordinary man, whether he be hospital surgeon or air-raid warden, what they are up to.

The arrangements for A.R.P. as far as doctors are concerned—their personal service, that is—are made. Ninety-five per cent. of the profession are card-indexed, and the central emergency committee at B.M.A. House is in a position to say how many doctors are available for any definite requirement. The Emergency Medical Services Memorandum No. 2 published for the Ministry of Health this week by the Stationery Office gives an outline of a big plan which will make 200,000 hospital beds available in the first 24 hours of a war and a further 300,000 very shortly afterwards. But it is typical of the unwillingness of the authorities to let out information that this publication has been delayed so that it is doubtful if its contents will be known to M.P.s generally in time for the A.R.P. debate.

The cumbrous procedure of the civil service and the apparent reluctance with which information is given out has become a serious handicap to Parliament. There is of course some justification for the civil service; many of them are real experts at their jobs, and they know, although they respectfully conceal the fact at official interviews, that parliamentarians are not. Many of the civil service distrust Parliament, just like Ministers of the Crown who are happiest when Parliament is not in session. If Parliament seems suspicious of the motives and intentions of the Government it is largely the Government's own fault for not being franker and more explicit in statement. But then Parliament is a very nineteenth-century institution—like the Houses of Parliament themselves—and with the qualifications of a bone-setter is trying to do work which needs modern training and technical specialisation. It is safe to say that the purely medical side of A.R.P. is satisfactory because it is in the hands of a medical committee meeting at the B.M.A. outside of Parliament and knowing its job. The hospital organisation in wartime will also be satisfactory so far as it goes, but whether it will go far enough depends partly on Parliament, partly on the county authorities in the country, partly on the Ministry of Health and partly on the medical profession. The profession ought to have a larger share of control, because they know the job and because if they do not have this control the services of individual doctors and of individual hospitals are not likely to be used to the best advantage.

The need of the scientifically trained mind in Parliament is very great—the whole of this A.R.P. muddle shows it. Civilian defence is starved because its importance is not understood.

It is not much more than two years since A.R.P. and civil defence measures in general began to be seriously taught to the population in this country. In the autumn of 1936 the first medical A.R.P. instructors of the medical, nursing and allied professions began work. But only at the time of the September, 1938, crisis was a handbook on A.R.P. distributed to the general population, although it had been ready for over twelve months—and only at the last minute were protection trenches dug. Now, behind the scenes, there has been a very great activity, as this Ministry of Health memorandum on emergency hospital arrangements indicates. But there is a great deal more that might be made public.

The proposed division of the country into regions which can function independently if cut off from other areas by the destruction of communications by air attack implies a similar division of medical arrangements. The report indicates that hospitals in large cities will become little more than first-aid posts and that base hospitals will have to be at comparatively long distances away from vulnerable areas. This inevitably means not only the spreading of medical and surgical staff over a number of hospitals but also the spreading of instruments, X-ray apparatus and all the technical equipment of hospitals over a number of hospitals. For a time the whole medical profession and the hospital institutions will be thrown into one melting-pot and it is very important that the medical profession, through its representative bodies, should have a big share of control. The fact that the B.M.A. has been able to prepare a list of doctors for use in a war which contains the names and particulars of 95 per cent. of the profession given voluntarily and individually means that doctors are not only scientifically trained people but are also disciplined—voluntarily disciplined. No political organisation of familiar type, no trade-union and probably no other professional association, can approach the efficiency of this organisation. This organisation is a great power and might be used with much greater effect than at present in public affairs and in Parliament. It should be given a much greater share of the control of A.R.P. arrangements. It might, for instance, be asked to organise and supervise the service of air-raid wardens.

FROM THE PRESS GALLERY

Social Services

In the House of Commons on Feb. 22 Mr. GEORGE HALL urged the necessity for an inquiry into the working of the social insurance services. In 1910 all the provision made by the state and the municipalities to deal with social insecurity amounted to £7,500,000 for old-age pensions and £16,000,000 for poor-law relief. In 1936, the latest available full year, the expenditure under the various social insurance services, including public assistance relief, amounted to £268,000,000—ten times that of thirty years before. Although that figure seemed large it was less than 5 per cent. of the total income of the country, and when it was realised that the beneficiaries under the various schemes represented 20 per cent. of the total population, the sum appeared very small indeed. The State itself got off very lightly for its direct contribution was only £136,000,000, the remainder being divided among workpeople and employers. He suggested that all these services should now be brought under one department with a minister of social services at its head. Under a coördinated system of administration there would be an abolition of many of the anomalies, and instead of a lowering to the lowest there would be an increase to the highest benefit paid. Who would say that the nation had not the money to meet these needs? We were the wealthiest nation in the world.—Sir ARNOLD WILSON thought that the task of a royal commission with terms of reference so broad as

Mr. Hall suggested would be beyond the wit of man. It would involve half the Cabinet, and something like half the total activities of Whitehall. Social insurance schemes were nowhere so complete, so efficient, or so economical as they were in the totalitarian states. The reason was that to make the schemes fully efficient and complete involved a great element of regimentation, which had its perils as well as its advantages. He hoped one day to see family allowances an integral part of our social system. He also hoped to see the national health insurance scheme further developed, but he questioned whether it should be extended by raising the income limit. On the other hand, the present system of administration through 917 approved societies and 6500 actuarially independent branches was wasteful, and the time was approaching for a national system to be devised. The provision as regarded dental benefit was most unsatisfactory. The Minister would perhaps say that the cure for dental trouble was not the services of the dentist, but larger supplies of milk. But the wealthier classes were just as badly off as the poor in the matter of teeth. The last report on teeth by the London County Council's medical officer certainly gave that impression. The only reason why the well-to-do did not suffer so much was that they spent three times as much on their dentists as on their doctors, and they counted that money well spent. He suggested that the proper way to remedy some of the anomalies that existed was by establishing a statutory commission such as already existed in connexion with unemployment, with power to make modifications by orders in council, subject to ratification by the House of Commons.

Dr. EDITH SUMMERSKILL said that nobody had mentioned the claims of the dependents of the insured workers for national health insurance benefit. The children obtained some measure of supervision at school, but it was not in any way comprehensive. The mothers of the children were absolutely ignored. The married woman worker after the age of 23 joined the most neglected section of the community so far as health was concerned. The life of many poor women after that age was an obstetrical steeplechase. She was no sooner over the hurdle of one confinement than she was facing another. The expectation of life of women at that period was less than that of men, and yet they were denied any form of state health insurance. Could it be wondered at that hospital outpatient departments were crowded with these women who were the end-products of this neglect? The medical profession would welcome the inclusion of this new category.

Mr. BERNAYS, parliamentary secretary to the Ministry of Health, said that the Government were fully alive to the need for further extension of the social services. In spite of the unprecedented calls upon the Exchequer for rearmament they were now spending £50,000,000 a year more on social services than when the Government came into office. To double old-age pensions would cost £71,000,000, while the reform mentioned by Dr. Summerskill would cost the country £10,000,000. The proposal for pensions for wives at 60 would cost another £4,000,000. These reforms could not be undertaken without substantially increasing taxation, and it would be a rash man who said that that would be good for the country. The Chancellor of the Exchequer also had to keep in mind that the young must keep the old. Owing to the high birth-rate at the end of the nineteenth century and the low rate now, and the longer expectation of life, more and more old people had to be supported and there were fewer and fewer young workers to maintain them. The power to increase old-age pensions depended upon the extent to which they could equip young men and women for the struggle to maintain and extend Great Britain's power and influence in the markets of the world. That was being done in the maternity and child welfare services, in the school medical inspections, in the consulting-rooms of panel doctors, in the employment exchanges, in the training centres, and in the educational services. He did not think that a case for an inquiry had been made out. He agreed with Sir A. Wilson in regard to the importance of dental benefits, but pointed out that two-thirds of the insured population now had an opportunity of receiving dental treatment.—Mr. T. SMITH said that the present insurance medical service was purely a general practitioners' service, which meant that it stopped short just where the need was greatest. It should cover the treatment of disease from the general practitioner to the specialist or hospital, if need be.—Sir F. FREMANTLE said that the medical profession knew the danger of suggesting that these things could be done merely by spending money. The thing to do was to bring public opinion along to help together with such money as was required.

Holiday Camps

In the House of Lords on Feb. 22 Viscount ASTOR raised the question of the Government's proposals in regard to camps. The value of these camps, he said, had been proved in the Special Areas, where, according to the report of the Commissioner for 1938, the average child attending camp for a fortnight had increased 3 lb. in weight. The report for Scotland stated that the provision of camps for unemployed men and their families was one of the most useful and satisfactory pieces of work which the Scottish Council had tackled.—Earl DE LA WARR, president of the Board of Education, said that the camps could be used as schools, so that town children could spend say a fortnight in them during term-time, or they could be used for school holidays. They might take children who were suffering from minor bad health and needed building up or might be let to boys' or girls' clubs, to industrial firms for their employees, or to trade-unions. This great social experiment arose out of the tragic need for war preparation, but that was no reason why they should not see that they got the best value out of it for the constructive purposes of peace.

Makerere College in Uganda

In introducing a supplementary estimate for the Colonial Office in the House of Commons on Feb. 23 Mr. MALCOLM MACDONALD, Secretary of State for the Colonies, said that the establishment of Makerere College was a great step forward in the development of higher education in East Africa. The government of Uganda had voted £10,000 in support of the College, and the native administrations in Kenya and Tanganyika might also give it financial support. The Empire Cotton Growing Association was making a grant of £10,000 towards the biological laboratory. In order to endow the College the government of Uganda was giving £150,000, the government of Tanganyika £100,000, and the government of Kenya £50,000. It was proposed that the United Kingdom Government should complete the fund of £500,000 by contributing £100,000.

QUESTION TIME

WEDNESDAY, FEB. 22

Motor Drivers and Alcohol

Mr. MATHERS asked the Minister of Transport if he recognised that a large proportion of road accidents occurred as the result of drivers of motor vehicles drinking intoxicating liquor, though they were not so affected as to be described as under the influence of drink; whether he would arrange to have the number of such cases shown in accident returns; and whether he proposed to take steps to ensure that persons partaking of alcoholic drinks should not drive a motor vehicle within a certain stipulated time thereafter.—Mr. BURGIN replied: I am not inclined to believe that a large proportion of road accidents can be attributed to drink. The extent to which the consumption of alcoholic liquor by drivers of motor vehicles may have been the contributory cause of accidents is, I am afraid, not susceptible of demonstration by statistics, nor do I think that trustworthy information on the point

would be obtainable in the manner suggested. In the special investigation made in 1936–37 it was found that out of nearly 200,000 accidents 1307 were attributable to drink or drugs as a primary cause, and in 567 cases the driver was the person affected. As at present advised I am not prepared to introduce legislation under which it would be an offence to drive a motor vehicle within a specific period after the consumption of intoxicating liquor.

Mr. MATHERS: Is it not the real snag in many of these cases that motor drivers are charged with the minor offence of careless driving because of the fear in the minds of those who are bringing the action that a conviction would not be secured otherwise?—Viscountess ASTOR: Will the Minister bear in mind the evidence given before the committee set up by the late minister of transport and also the recommendations of the medical committee who looked into this matter and said that something should be done?—Mr. JOHNSTON: Has the Minister considered the evidence submitted by the Scottish sheriffs in the last two years as to the preponderance of serious accidents arising from drunken drivers?

Mr. BURGIN: I hope the House will not think that in anything I have said I desire in any way to condone the offence of driving under the influence of drink. I wish that to be as seriously punished as possible. What I am endeavouring to deal with is the much wider problem as to whether there is a large or growing proportion of accidents due to drink. The evidence does not support that statement. I will willingly examine information and statistics from any quarter, because this is a real problem, and if we can solve it so much the better.

Pulmonary Diseases on the Gold Coast

Mr. SORENSEN asked the Secretary of State for the Colonies whether, in view of the report of the registrar of births and deaths of the Gold Coast that pulmonary diseases accounted for 165 out of every 1000 deaths in that territory, and that a quarter of the total deaths registered occurred between the ages of 24 and 25, he would ask for a report on the causes of this position.—Mr. MACDONALD replied: The figure mentioned by the hon. Member in the first part of the question refers only to non-tuberculous diseases of the respiratory system. With regard to the second part, the age-group appears to be 24–45, not 24–25. This age-group includes practically all immigrant labourers, many of whom are said to have little resistance to pulmonary infections. The serious nature of the pulmonary disease problem is recognised and is discussed in the report of the medical department for 1937, a copy of which is being placed in the library of the House.

Foreign Nurses in British Hospitals

Mr. MCENTEE asked the Home Secretary how many applications he had had from local authorities or private hospitals to grant permits to foreign nurses to work in hospitals in Great Britain; how many permits had been granted during the past year; and how many were awaiting decision.—Mr. GEOFFREY LLOYD, under-secretary, Home Office, replied: The Ministry of Labour issued 224 permits during 1938 to hospitals to employ foreign nurses, and in addition made 98 favourable recommendations to the Home Office in respect of persons already in the United Kingdom who wished to enter hospital posts. In 89 cases the Ministry of Labour was unable either to issue a permit or to make a favourable recommendation to the Home Office. Fifty cases are outstanding. In addition to the cases dealt with under the normal procedure, arrangements were made in October with the nursing subcommittee of the Coördinating Committee for Refugees to allow German women to undertake work as nurses in hospitals in this country, and visas were authorised in 63 cases up to the end of 1938.

THURSDAY, FEB. 23

Malnutrition among School Entrants

Mr. GEORGE GRIFFITHS asked the Parliamentary Secretary to the Board of Education the number of school entrants for the 12 months to the last convenient date found on inspection to be suffering from malnutrition or to require dental treatment, respectively, and the percentage in both cases to the total entrants.—Mr. KENNETH LINDSAY replied: Of 571,032 entrants to public elementary schools in England and Wales medically examined during the year 1937, the latest period for which figures are available, 3314 or 0·6 per cent. were found to have bad nutrition and 58,267 or 10·2 per cent. slightly subnormal nutrition. Separate figures are not available to show the percentage of entrants who required dental treatment.

Viscountess ASTOR: Is it not true that 16 per cent. of children entering the elementary schools are suffering in some way from physical defects and that if they had had the advantage of nursing schools it would be only 7 per cent.

Mr. LINDSAY: The standard is improving.

Survival of Retired Civil Servants

Mr. AMMON asked the Secretary to the Treasury what was the average length of life of civil servants retiring at 60 years of age.—Captain EUAN WALLACE replied: The average length of life of established civil servants retiring at age 60 is: men, 16 years; and women, 18 years.

Training of Women Refugees as Nurses

Mr. HOLLINS asked the Minister of Health what steps had been taken or were contemplated by local authorities to offer to women refugees any opportunity for training as nurses in the hospitals under their control.—Mr. ELLIOT replied: I am informed that 19 town councils and 3 county councils have agreed to admit a limited number of refugees as probationers in their hospitals, and that suitable candidates are being allocated by the Coördinating Committee for Refugees.

Water-supply and Drainage in Evacuation Areas

Colonel HENEAGE asked the Minister of Health whether he was aware that in many rural districts to which it was proposed to evacuate large numbers of the population, there were at present no adequate arrangements for a public water-supply, and no adequate system of sewerage or sewage disposal sufficient for the needs of the present population; that there was a grave apprehension on the part of many local authorities in rural districts that the absence of these facilities was likely to have serious consequences, the risk of which would be accentuated by the removal of large numbers of the civil population from congested areas; and what steps the Government proposed to take by way of grant from national funds, to deal with these matters.—Mr. ELLIOT replied: In the evacuation arrangements, steps will be taken to avoid areas where insuperable difficulties are likely to arise on account of water-supply or drainage. It is not considered that the number of such areas will be large. I am not at present satisfied that there is a case for grant from national funds for the purpose of improving water-supply or drainage in rural areas as part of the evacuation scheme. Representations, however, have been made to me in the matter by the county councils and rural district councils associations, and I am seeing a deputation from them on March 7.

Whooping-cough Experiments in Germany

Sir ARNOLD WILSON asked the Minister of Health whether he had received details of the extensive experiments carried out at Stuttgart in curing whooping-cough in children by flights at high altitudes; and whether it was proposed to make similar experiments in low-pressure air cabinets in this country, in view of the fact that whooping-cough was responsible in 1936, in England and Wales, for three times as much infant mortality as all forms of tuberculosis.—Mr. ELLIOT replied: I am aware of these experiments, the progress of which is being followed with interest in my department. With regard to the second part of the question, I am not aware that any experiments in the treatment of whooping-cough by means of low-pressure air cabinets have been undertaken, and I am advised that such experiments would be attended by considerable risks.

Hospitals and Emergency Accommodation

Sir THOMAS MOORE asked the Minister of Health what was the present approximate capacity of all hospitals in Great Britain, including and excluding mental hospitals; and whether it was proposed to take any steps to increase this capacity in connexion with the emergency arrange-

ments, or in connexion with the schemes for erecting camps.—Mr. ELLIOT replied: The number of hospital beds in England and Wales is approximately 502,000, including mental hospitals, or 371,500, excluding those hospitals. Of the latter figure some 120,000 beds can be freed for use by casualties in an emergency, and sufficient new beds have been obtained or are on order to increase the capacity by 80,000. A further 100,000 beds could be accommodated in existing hospitals if necessary, and plans for new hospital units are under consideration. The 50 camps at present proposed are primarily to supplement billeting accommodation in an emergency, not hospital accommodation. As to the Scottish figures, I must refer my hon. friend to the Secretary of State for Scotland.

New Standards of Lighting in Factories

Mr. ROBERT MORRISON asked the Home Secretary when it was proposed to issue regulations prescribing a standard of sufficient and suitable lighting for factories as required by part I, clause 4, of the Factories Act, 1937.—Sir SAMUEL HOARE replied: I have appointed an expert committee to assist me in considering what standards can properly be prescribed, and they submitted last autumn an interim report recommending various principles for securing good general lighting. As the next step in getting these principles translated into practice, a leaflet has been drawn up and will shortly be issued to factory occupiers throughout the country summarising the committee's recommendations and urging them to have the lighting arrangements in their factories reviewed with reference to the principles indicated. As soon as employers have had reasonable time to go into the matter I would propose to follow it up by issuing draft regulations on the subject. This procedure is, I am advised, more likely to achieve satisfactory practical results than the formulation of a draft legal code at this stage.

MONDAY, FEB. 27

Medical Services in Spanish Refugee Camps

Lieut.-Commander FLETCHER asked the Prime Minister if his attention had been called to the misery existing in the refugee camps in France; that rainproof shelter existed for only 10 per cent. of the refugees; that medical services were rudimentary; that a third of the refugees were suffering from stomach troubles owing to food, and that no possibility existed of isolating infectious diseases such as scabies; and if he would, in consultation with the French Government, dispatch a mission to view these camps on the spot and to make the necessary offers of assistance to the French authorities.

Mr. NOEL-BAKER asked the Prime Minister whether he could make a statement concerning the conditions in the Spanish refugee camps at Perpignan; and if he proposes to make any further grant of assistance.—Mr. BUTLER, under-secretary for foreign affairs, replied: As I stated on Feb. 23 His Majesty's Government are in consultation with the French Government on this subject. It will be appreciated that any steps which it may be decided to take must receive the full approval of the French Government, and in these circumstances a statement from me today would be premature. I can, however, assure the House that the matter is receiving our most sympathetic consideration and I hope very shortly to be able to make a full statement.

Gas Attack Protection for Infants

Mr. GALLACHER asked the Lord Privy Seal whether any progress had now been made in devising and producing a satisfactory form of protection from gas attack for infants.—Sir JOHN ANDERSON replied: Yes, Sir. Satisfactory articles have been designed, and contracts have been placed for their production.

Advertisement of Cancer Treatment

Mr. GROVES asked the Minister of Health whether it was his intention to prohibit, under clause 4 of the Cancer Bill, registered medical practitioners referring to any article calculated to lead to the use of that article in the treatment of cancer when speaking to audiences or writing for groups of people composed of persons other than those mentioned in subsection (4) (*a*) and (*b*).—Mr. ELLIOT replied: In so far as such statements as the hon. Member has in mind could be held to be advertisements, I am advised that, subject to the exceptions contained in subsection (5), the effect of the clause is as stated by the hon. Member.

TUESDAY, FEB. 28

Radium in Cornwall

Mr. BEECHMAN asked the Secretary for Mines whether, in view of the large quantity of pitch-blende in the west of Cornwall, he would cause a survey to be made for the purpose of ascertaining whether radium could be obtained therefrom in sufficient quantity to justify development.—Captain CROOKSHANK replied: I am advised that although pitch-blende is known to occur in several places in Cornwall very few deposits have been of commercial value. These deposits have now been worked out or contain such low-grade ores that they do not justify processing for the recovery of radium. The Geological Survey of Great Britain, for which my noble friend the Lord President of the Council is responsible, is now completing a comprehensive investigation into the mineral resources of Cornwall, and in these circumstances it does not appear that any advantage would accrue from the institution of a separate survey of the kind suggested.

Army Recruits Rejected

Mr. MCENTEE asked the Secretary of State for War what number of men applied to enlist in the Army for the twelve months to the latest available date; what percentage were rejected on medical grounds; and what was the percentage of the applicants for enlistment rejected on the ground of defective vision.—Sir V. WARRENDER, Financial Secretary to the War Office, replied: Of the 61,552 applicants to enlist into the Regular Army during the year ended Dec. 31, 1938, 12·25 per cent. were rejected by examining medical officers. The percentage of the total number of applicants who were rejected on the ground of defective vision was 1·96 during the twelve months ended Sept. 30, 1938, which is the latest date to which figures relating to the causes of medical rejection are available.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 18, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1637; diphtheria, 1212; enteric fever, 20 (25 "expected"); pneumonia (primary or influenzal), 1919; puerperal pyrexia, 195; cerebro-spinal fever, 44; acute poliomyelitis, 6; encephalitis lethargica, 1; dysentery, 24; ophthalmia neonatorum, 76. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 24 was 3352, which included: Scarlet fever, 659; diphtheria, 859 (carriers, 47); measles, 5; whooping-cough, 828; puerperal fever, 24 mothers (plus 13 babies); encephalitis lethargica, 300; poliomyelitis, 3. At St. Margaret's Hospital there were 18 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 2 (0) from enteric fever, 7 (0) from measles, 1 (0) from scarlet fever, 14 (4) from whooping-cough, 33 (5) from diphtheria, 40 (15) from diarrhœa and enteritis under two years, and 255 (37) from influenza. The figures in parentheses are those for London itself.

The deaths attributed to influenza are again on the downgrade, the totals for this week and the seven preceding weeks (working backwards) being 255, 265, 210, 173, 223, 214, 144, 89. Of these 255 deaths, 108 were reported from the South-eastern Area, Ilford contributing 9, Croydon 6; 80 from the Northern Area, Manchester contributing 13, Sheffield 12; and 51 from the Midland Area, Bristol contributing 13, Birmingham 10, Nottingham 6; Ipswich and Norwich each reported 4. Cardiff had 2 deaths from measles. Fatal cases of diphtheria were scattered over 24 great towns, Liverpool reporting 3, Sheffield, Stanley, Birmingham each 2. The deaths from enteric fever were at Hastings and Liverpool.

The number of stillbirths notified during the week was 244 (corresponding to a rate of 37 per 1000 total births), including 28 in London.

OBITUARY

FRANK GERARD CLEMOW

C.M.G., M.D. EDIN., D.P.H.

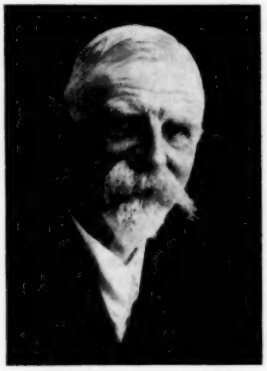
Dr. Clemow, who died in London last Saturday at the age of 76, had spent so much of his life in Russia and Turkey as to become a recognised authority on international health. Born in 1863 and educated at the Royal Institution School at Liverpool, he graduated in medicine with honours at Edinburgh in 1885. After holding some minor appointments in Scotland he went to Kronstadt as resident medical officer to the British Seamen's Hospital and remained there for ten years, which covered the big cholera epidemic of 1892, a study of which he contributed to the transactions of the Epidemiological Society. He became interested in the medicinal waters and muds of Russia and wrote an account of these. But the breadth of his knowledge appears best in his account of medicine past and present in Russia, which appeared as a supplement to THE LANCET of Aug. 7, 1897, and of which his authorship was not revealed at the time. Clemow left Russia to become physician to the British Embassy at Constantinople, and there he became associated with the famous Board of Health, the scope of which covered sanitary services in the Levant and on the Turco-Persian frontier as well as the supervision of the Mecca pilgrimage and the new Hedjaz railway. Each of these services administered a series of lazarets, disinfecting stations and sanitary offices. Clemow was British delegate to the board from 1900 until the foreign element was eliminated from it in 1914. He knew more than anyone else of the health problems of the Shiah pilgrimage, of the carriage of dead bodies to the cities of Iraq, and of the sanitary defences of the Suez Canal. With this equipment his services were in request in various directions throughout the war years. At first he was in charge of the red-cross missions to Montenegro and later to Rumania and Russia, and in 1918 he was appointed director of relief work in Serbia. During these varied tasks he accumulated a number of unusual distinctions such as the Montenegrin order of Danilo I and the Russian order of St. Anne 2nd class with swords. After his retirement from active medical duties he was frequently consulted by international bodies. He had been British delegate to various sanitary conferences in Paris and was a member of the British delegation at the Lausanne Peace Conference in 1923–24. He was also a contributor to the transactions of the Royal Geographical Society, of which he was a lifelong member, and was the author of a manual on the geography of disease, and of the section on the same subject in Allbutt and Rolleston's "System of Medicine."

Clemow's work ranks with that of such men as Ruffer, Balfour, Barère, Granville and Buchanan, to whom this country and western Europe largely owe their almost complete immunity from the classic scourges—plague, cholera and typhus—which still cause such havoc in the east.

HUGH REEVE BEEVOR

BT., M.D. LOND., F.R.C.P.

Sir Hugh Beevor of Hargham, Norfolk, consulting physician to King's College Hospital, died on Feb. 24 at the age of 80. He was the second son of Sir Thomas Beevor, the fourth baronet, and succeeded to the baronetcy in 1885, his elder brother having died six years before. He was educated at Felsted and King's College, London, qualifying in 1882 and taking his M.R.C.P. in 1888. After being house-physician and medical registrar at King's College Hospital he was elected to the staff as assistant physician in 1890. In 1896 he succeeded John Curnow as dean of the medical faculty of King's College, a post he held for two years. At this time he was also on the staff of the Victoria Park Hospital and saw many tuberculous patients there and in private; in 1899 he delivered the Hunterian Society oration on the declension of phthisis. Beevor was at one time examiner in medicine to the Society of Apothecaries, and he represented the society on the General Medical Council. He was medical officer to the Norwich Union insurance company, and later became a director. In 1909 he was elected a fellow of King's College, and in 1914 he became consulting physician to King's College Hospital on retiring from the active staff.



[*Elliott and Fry*

Beevor was an authority on horticulture and more especially on trees. In London he was often consulted by the furniture trade when the identity of some wood was in doubt. After his retirement he was able to indulge this interest to the full, and he came to know every inch of his family estate at Hargham and the history of the rare trees planted there by his father and himself. He travelled extensively in Canada, Australia and Japan, bringing back unusual specimens and seeds, and he was never happier than when conducting a party of friends or a learned arboricultural society round his gardens and woods. In 1895 he married Emily, daughter of Sir William Foster, who died in 1909, and he leaves one daughter and a son, Commander Thomas Lubbock Beevor, R.N.

LEWIS JOHN HOBSON

M.D. LOND., F.R.C.S.

THE death of Dr. Hobson on Feb. 22 at the age of 87 ends a life of long and useful service. Born at Eaton Socon, Huntingdonshire, he was educated at Bedford School and at University College, London, where he had a distinguished student career, taking gold medals in surgery, midwifery, materia medica and comparative anatomy. He took honours in his final M.B. in 1875, and became F.R.C.S. in 1877 and M.D. in 1882. After qualifying he filled house-appointments at Bristol, Newcastle-on-Tyne, and Scarborough, and later practised in York, where he was physician to the York County Hospital. In 1885 he settled in Harrogate, and was appointed physician to the Royal Bath Hospital. In 1892 he joined the consulting staff and in 1935, on the completion of fifty years in the service of the hospital, he was elected vice-president.

Though an F.R.C.S. Hobson never practised surgery: his interests lay in spa practice, especially in skin diseases, on which he wrote occasional papers. Of a retiring disposition, he took little part in public life; his energies were largely devoted to the welfare of the Royal Bath Hospital. He was one of the

founder members of the Harrogate Medical Society, of which he became president in 1896. For some years he worked in close association with the late Dr. George Oliver, prior to the latter's retirement from Harrogate. Never robust, he had little interest in physical recreation. His main hobbies were cycling and fishing, and though he began somewhat late in life he became a keen and skilful angler. During the last few years he was partially crippled with arthritis of the hip and in consequence gradually gave up his practice.

Dr. Hobson was a kindly, painstaking physician, and a fine representative of the older school of spa practitioners. He was married twice but had no children, and his widow survives him.

THE LATE PROF. GRAHAM SIMPSON

Prof. Grey Turner writes: In your obituary notice of Graham Simpson you mentioned several of his examinerships but Durham was omitted. Simpson acted as my external examiner in that University for several years and I always used to look forward with great pleasure to his visits. He was a very sound examiner and held the balance very justly as between the necessary standards and the candidates with whom he was popular. When he got hold of a good man he thoroughly enjoyed himself, especially if he felt that it was legitimate to branch off into some perhaps rather intricate problem. He loved his work at the College of Surgeons, both while on the court of examiners and on the council, and nothing short of the very serious illness which overtook him last year would have induced him to absent himself from a single meeting. He was always delightfully conciliatory, though at the same time if he felt that some certain course was the correct one, it was not easy to alter his decision. He was very pleased at being selected to deliver the Bradshaw lecture and was already actively engaged in its preparation at the time of his death.

As a companion on foreign tours Simpson was very delightful for he had a surprising knowledge of European history and a great appreciation for things beautiful, and especially if mellowed by age. It is a great pity that in his busy life he did not find time to write more for he could express himself very well indeed, and his few papers showed a high literary standard and were interesting and valuable contributions to surgery. He was fond of the classics and was accustomed to peruse his favourites as a relaxation. No one could be more modest about his very considerable attainments and no one was ever a truer friend, and his loss will be greatly felt by a large section of the profession.

Dr. JOHN HENRY HARRIS of Dartmouth has died at the age of 77. He did his medical training at St. Bartholomew's Hospital and qualified in 1883. In his early student days he was on board the *Princess Alice* when she sank in the Thames with the loss of over 600 lives. In 1896 he took his D.P.H. Cambridge and was then appointed medical officer of health for Dartmouth. He was also medical inspector of seamen to the port of Dartmouth. During the late war he served with the Royal Army Medical Corps in India with the rank of lieutenant-colonel.

Dr. JAMES DEVON, who died this week at the age of 72, was born in Glasgow and educated at Anderson and St. Mungo's Colleges. He qualified in 1893, and after house-appointments at the Glasgow Royal Infirmary and at Town's Hospital, became medical officer to Glasgow prison, a post he held until 1913. In 1902 he was appointed medico-legal examiner for the Crown in criminal cases, and in 1913 prison commissioner for Scotland. Dr. Devon was an authority on all branches of criminology, and wrote some important papers on the treatment of offenders.

Prof. ARNE KISSMEYER, one of the most prominent of the younger generation of medical men in Denmark, died on Feb. 3, twelve days before his 50th birthday. His studies abroad were conducted mainly in Switzerland and France. At home his numerous appointments in general hospitals were followed by service for many years in the Finsen Institute and the State Serum Institute. A second professorship in dermatology at the University of Copenhagen having been created in 1938, he was appointed to it. He had already in 1932 succeeded Prof. Ehlers at the fourth department of the municipal hospital. His publications in Danish and French on dermatology and the venereal diseases were numerous, and his personality as a lecturer was inspiring.

Dr. JOHN ROSS HOME ROSS, who died in London on Feb. 10, had practised for the last forty years at Lower Kingswood, Surrey. He graduated from Edinburgh in 1886 and for some time remained there as clinical assistant to the dermatological department of the Royal Infirmary and as physician to the Western Dispensary. Before settling in the south of England he went out to Rangoon as physician to the Dufferin Hospital there.

MEDICAL NEWS

University of Cambridge

On Wednesday, March 8, at 5 P.M., Dr. H. E. Magee of the Ministry of Health, will give a lecture in the physiological laboratory. He will speak on methods of studying problems of nutrition.

On Feb. 25 the following degrees were conferred :—

M.D.—Arthur Willcox.

M.B., B.Chir.—M. J. Ingram, C. G. Rob, P. C. Conran, and Gerald Bourne (by proxy); J. I. H. Laurie, Arthur Leese, E. W. O. Adkins, James Arnott, and K. G. Bergin.

Society of Apothecaries of London

At recent examinations the following candidates were successful :—

Surgery.—A. N. Boyle, H. J. S. Coldham, A. Dunkerley, D. S. Edwards, K. P. D. Griffiths, E. L. Moll, V. N. Stevenage, W. E. Swanston, and T. I. Thomas.

Medicine.—H. J. Dismorr, K. R. P. Kent, and R. G. Ticehurst.

Forensic Medicine.—H. J. Dismorr, K. R. P. Kent, and R. G. Ticehurst.

Midwifery.—E. Batley, T. Bliss, N. B. Eastwood, D. Harken, H. A. C. Ingouville-Williams, J. R. F. E. Jenkins, W. Simpson, E. Smith, and H. F. Sparling.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery and midwifery :—

H. J. S. Coldham, Univ. Coll. Hosp.; H. J. Dismorr, Camb. and St. George's; A. Dunkerley, Manc.; N. B. Eastwood, Camb. and Charing Cross; J. R. F. E. Jenkins, Middlesex; K. R. P. Kent, St. Mary's; and T. I. Thomas, Lond. and West Lond. Hosps.

Royal College of Surgeons of England

The spring course of museum demonstration is now being given at the college, Lincoln's Inn Fields, London, W.C.2. On March 6 and 13 Dr. L. W. Proger will describe new specimens which have been added to the museum, and on March 10 Dr. A. J. E. Cave will lecture on the anatomy of the pharynx and œsophagus, and on March 17 on the anatomy of the stomach. The demonstrations are open to advanced students and medical practitioners and are held at 5 P.M.

University of London

Dr. H. P. Himsworth has been appointed to the university chair of medicine tenable at University College Hospital medical school.

Dr. Himsworth, who is 33 years of age, was educated at King James's Grammar School, Huddersfield, and at University College, London. When he graduated M.B. in 1928 he obtained the university gold medal, and two years later he was once more awarded this distinction for his M.D. thesis. After holding house appointments at University College Hospital he was appointed an assistant in the medical unit in 1930, and he became M.R.C.P. in the same year. In 1932 he was awarded a Beit fellowship and he held this while working at the hospital. In 1935 he became first assistant in the medical unit, and in the following year deputy director. Last year he was elected F.R.C.P. and this week he is delivering the first of his Goulstonian lectures to the Royal College of Physicians. He has published many papers on diabetes mellitus and this is the subject which he has chosen for his lectures.

The title of professor of physics in the university has been conferred on Mr. Gilbert Stead in respect of the post held by him at Guy's Hospital medical school.

Mr. L. V. Cargill, consulting ophthalmic surgeon to King's College Hospital has been appointed a fellow of King's College.

Joint Tuberculosis Council

At a meeting of this council held in London on Feb. 18, Dr. G. Lissant Cox being in the chair, discussion took place on the draft memorandum presented by the committee (with Dr. James Watt as convener) appointed to consider the organisation of the tuberculosis service in time of war. The report envisages the necessity for the service to continue its work during war-time and to be ready to deal with the probable rise in tuberculosis morbidity, the examination of recruits and of men discharged from the forces with tuberculosis, and the movement of population by evacuation schemes. Arrangements were reported for a series of postgraduate courses. A report on skiagraphic terminology presented by Dr. G. Jessel, the convener of a committee of five with four coöpted radiologists, draws attention to the lack of uniformity at the present time in reporting on the X-ray manifestations of pulmonary disease.

Among other matters to be considered by the Council are: (1) major surgical treatment of pulmonary tuberculosis; convener Mr. J. E. H. Roberts; (2) the institutional treatment of children suffering from pulmonary tuberculosis; convener Dr. Peter Edwards. The following officers were elected for 1939: chairman, Dr. S. Vere Pearson; vice-chairmen, Dr. Lissant Cox and Dr. D. A. Powell; hon. treasurer, Dr. Jessel; hon. auditor, Dr. D. P. Sutherland; hon. secretary, Dr. J. B. McDougall.

University College Hospital

On Tuesday, March 7, at 5 P.M., Sir Walter Langdon-Brown will deliver the first Suckling memorial lecture at the medical school. He will speak on visceral symptoms in emotional states. The lecture is open to all members of the medical profession and to medical students.

The British Institute of Philosophy

An address on ethics and the supernatural will be given by the Very Rev. W. R. Matthews, D.D., on Tuesday, March 14, at 8.15 P.M., at University College, Gower Street, London, W.C.1. Cards of admission can be had from the director of studies at University Hall, 14, Gordon Square, W.C.1.

PUBLIC HEALTH

Need for a Safe Milk-supply

ON Feb. 24 Mr. WALTER ELLIOT, Minister of Health, and the Earl of FEVERSHAM, parliamentary secretary to the Ministry of Agriculture, received a deputation from the People's League of Health, introduced by Dr. C. O. HAWTHORNE, which urged the value of milk as a food and the urgent importance of legislation to ensure that consumers might rely on the cleanliness and purity of the milk-supply.

Mr. WALTER ELLIOT said he had received apologies for unavoidable absence from Lord Dawson—who said he believed all milk intended for human consumption should either be pasteurised or come from certified tuberculin-tested cattle—and from Lord Horder.

Sir HENRY GAUVAIN said that it was incredible that milk, the nation's most precious food, might be supplied without restrictions as to its safety. No other food was thus exempt, and in the interests of both the community and the farmers we should ensure the safety of all who consumed it. The only way of doing this was by pasteurisation.

Sir WALTER LANGDON-BROWN held that though the economic difficulties in the way of safe-milk legislation might be considerable they would not be overcome by raising false issues. It was misleading to allege that the medical profession was divided on this subject. Why should the views of an inconspicuous minority against pasteurisation be so frequently quoted against the weight of opinion of the profession as a whole?

Sir JOHN LEDINGHAM, F.R.S., said that elaborate investigations had shown that pasteurisation in no way materially affected the nutritive value of milk.

Dr. VEITCH CLARK said that about three-quarters of the Manchester milk-supply was pasteurised, only 1 per cent. of the total supply being derived from tubercle-free herds. Nearly 400 cases of non-pulmonary tuberculosis occurred each year in Manchester, and he believed that 40 per cent. of them were due to the bovine bacillus.

Dr. A. S. M. MACGREGOR said that about 8 per cent. of the milk entering Glasgow contained tubercle bacilli. Of the children treated at the orthopædic hospital about 20 per cent. suffered from bovine tuberculosis.

Dr. MAULE HORNE said that typhoid epidemics had arisen from both milk and water contamination, but 95 per cent. of the water used for domestic purposes was boiled, which was not true of milk. A single delivery of 1600 gallons of milk had recently caused 900 cases of typhoid, including 75 deaths.

Major BRENNAN DE VINE, president of the National Medical Veterinary Association, said that milk samples in large towns showed 6–13 per cent. infected with tubercle bacilli.

Mr. WALTER ELLIOT, in reply, said that the Government were convinced that the League's proposal to ensure a safe and pure milk-supply was right and just, but there was a need for further education of public and parliamentary opinion. He had asked one of the more prominent of the younger medical men in this country to undertake the collation and review of the existing evidence on the whole subject of pasteurisation and the safety of milk-supplies, and he proposed to publish the result. The People's League of Health could assist by issuing reasoned statements of the case.

Besides the speakers the deputation included Miss Olga Nethersole, founder of the league, Sir Comyns Berkeley, Prof. Amy Fleming, Sir Ernest Graham-Little, M.P., Sir Arthur Harden, F.R.S., Dr. Hawthorne, Sir Leonard Hill, F.R.S., Sir Frederick Hobday, Mr. Eardley Holland, Dr. R. C. Jewesbury, Mr. A. Ernest Jones, Dame Louise McIlroy, Prof. F. C. Minett, Dr. Nathan Raw, Sir Milsom Rees, Mr. Louis Carnac Rivett, and Dr. V. A. T. Spong.

Medical Diary

March 6 to March 11

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.
TUESDAY.
Orthopædics. 5.30 P.M. (cases at 4.30 P.M.), Mr. S. L. Higgs: (1) Bilateral Amputation of Legs. Mr. Norman Capener: (2) Primary Carcinoma Arising in an Osteomyelitis Wound. Mr. G. O. Tippett: (3) Bilateral Cervical Rib. Mr. T. T. Stamm: (4–5) Hæmangioma of the Spine. Demonstration of distraction apparatus.
Pathology. 8.15 P.M., laboratory meeting at Guy's Hospital medical school, S.E.1.
WEDNESDAY.
Proctology. 8.30 P.M., Prof. E. D. Telford: Megacolon. Prof. J. Paterson Ross and Sir Lancelot Barrington-Ward will also speak.
FRIDAY.
Ophthalmology. 4 P.M., clinical meeting at the Bristol Eye Hospital.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.
MONDAY.—9 P.M., Prof. G. Grey Turner: The Surgery of the Gall-bladder and Bile-ducts. (Third Lettsomian lecture.)

HARVEIAN SOCIETY OF LONDON.
THURSDAY.—8.30 P.M. (26, Portland Place, W.1), Mr. A. Tudor-Edwards: The Modern Principles of Treatment in Bronchiectasis. (Harveian lecture.)

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY.—8.45 P.M. (Miller General Hospital, Greenwich, S.E.10), Mr. John Sandrey: Genito-urinary Emergencies.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY.—8.30 P.M. (11, Chandos Street, W.1), Dr. R. D. Gillespie: The Escape into Psychosis.

BIOCHEMICAL SOCIETY.
FRIDAY.—2.45 P.M. (department of physiology and biochemistry, University College, W.C.1), short communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1.
TUESDAY and THURSDAY.—5 P.M., Dr. H. P. Himsworth: Diabetes Mellitus. (Last Goulstonian lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2.
MONDAY.—5 P.M., Dr. L. W. Proger: demonstration of new specimens.
FRIDAY.—5 P.M., Dr. A. J. E. Cave: Anatomy of the Pharynx and Œsophagus.

UNIVERSITY OF LONDON.
TUESDAY, WEDNESDAY, and THURSDAY.—5.30 P.M. (Wellcome Research Institution, Euston Road, N.W.1), Prof. W. Schulemann (Bonn): Chemotherapy.
WEDNESDAY.—7.30 P.M. (University College, W.C.1.), Dr. Maitland Radford: Slum-clearance.

UNIVERSITY OF BIRMINGHAM.
THURSDAY.—4 P.M. (Hospitals Centre), Dr. Peyton Rous (New York): Present Aspects of the Cancer Problem. (First William Withering lecture.)

UNIVERSITY OF LIVERPOOL.
THURSDAY.—4 P.M. Prof. Henning Waldenström (Stockholm): Slipping of the Upper Femoral Epiphysis. (Lady Jones lecture.)

UNIVERSITY OF GLASGOW.
TUESDAY.—4.30 P.M. (Tennent Memorial Building, Church Street), Prof. A. J. Ballantyne: The Eye in Disorders of the Blood and Blood-forming Organs.

UNIVERSITY COLLEGE HOSPITAL, W.C.1.
TUESDAY.—5 P.M., Sir Walter Langdon-Brown: Visceral Symptoms in Emotional States. (Suckling lecture.)

TAVISTOCK CLINIC, Malet Place, W.C.1.
MONDAY.—4.30 P.M., Dr. H. Crichton-Miller: Self and the Family.
THURSDAY.—4.30 P.M., Dr. T. W. Mitchell: Character Formation.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.
MONDAY.—5.30 P.M., Colonel J. M. Weddell: A General Survey of War Injuries and Medical Arrangements.
TUESDAY.—4.30 P.M., Dr. S. Levy Simpson: Diseases of Endocrine Glands. 5.30 P.M., Colonel E. M. Cowell: General Scheme for Dealing with Wounded.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Dr. T. C. Stamp: Bacteriology of Streptococcal Infection. 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. E. C. Dodds: Hormones in Relation to Medicine and Pathology. 5.30 P.M., Colonel E. M. Cowell: Prevention and Treatment of Shock, and Preparation of Cases for Transport.
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological conference. 3.30 P.M., Mr. Leonard Phillips: Radiation Therapy in Gynæcology—Benign Conditions. 5.30 P.M., Dr. Janet Vaughan: Blood-transfusion.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. Stanford Cade: Radium. 5.30 P.M., Mr. C. H. Frankau: Common Infections of Wounds.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

NATIONAL HOSPITAL, Queen Square, W.C.1.
MONDAY.—3.30 P.M., Dr. D. Denny-Brown: Chorea and Choreo-athetosis.
TUESDAY.—3.30 P.M., Dr. J. St. C. Elkington: Forms of Progressive Muscular Atrophy (2).
WEDNESDAY.—3.30 P.M., Dr. F. M. R. Walshe: clinical demonstration.
THURSDAY.—Dr. Gordon Holmes, F.R.S.: Cerebellar Degenerations.
FRIDAY.—Dr. E. A. Carmichael: Subacute Combined Degeneration.
Outpatient clinic daily at 2 P.M.

ST. GEORGE'S HOSPITAL, S.W.1.
THURSDAY.—5 P.M., Dr. Mildred Creak: psychiatric demonstration.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street W.C.1.
THURSDAY.—2 P.M., Dr. Wilfrid Sheldon: Causes of Infantile Marasmus. 3 P.M., Mr. J. H. Doggart: Cause and Treatment of Cataract in Childhood.
Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn Road, W.C.1.
FRIDAY.—4 P.M., Mr. N. Asherson: Affections of the Lingual Tonsil.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.3.
WEDNESDAY.—4 P.M., Mr. Clifford Morson: Prostatic Obstruction—Cause and Effect.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, Ranelagh Road, S.W.1.
FRIDAY.—3.30 P.M., Dr. A. P. Cawadias: Diet in the Rheumatic Diseases.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street W.1.
MONDAY to SATURDAY.—ROYAL WATERLOO HOSPITAL, Waterloo Road, S.E.1, all-day refresher course in medicine, surgery, and gynæcology.—ST. MARY'S HOSPITAL, Paddington, W.2, Tues. and Thurs., 8 P.M., clinical and pathological M.R.C.P. course.—BROMPTON HOSPITAL, S.W.3, M.R.C.P. course in chest diseases (5.15 P.M., twice weekly).—MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1, Mon., Wed., Fri., 5.15 P.M., primary F.R.C.S. physiology course.—BRITISH LEGION HEADQUARTERS, 26, Eccleston Square, S.W.1, Thurs., 8.30 P.M., lecture on clinical and pathological features of bronchiectasis.—ROYAL CHEST HOSPITAL, City Road, E.C.1, Mon., Wed., and Fri., 8 P.M., M.R.C.P. course in heart and lung diseases. (Open to non-members.)—ST. MARK'S HOSPITAL, City Road, E.C.1, all-day course in proctology.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY.—3.30 P.M., clinical meeting at Bolingbroke Hospital.

MANCHESTER ROYAL INFIRMARY.
FRIDAY.—4.15 P.M., Mr. F. G. Wrigley: ear, nose, and throat demonstration.

LEEDS GENERAL INFIRMARY.
TUESDAY.—3.30 P.M., Prof. C. W. Vining: The Interpretation of Common Symptoms during the Early Years of Life.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY.—4.15 P.M. (Victoria Infirmary), Mr. Norman Davidson: surgical cases.

Vacancies

For further information refer to the advertisement columns

*Albert Dock Hosp., Alnwick Road, E.*16.—Second res. M.O., at rate of £110.
Altrincham, St. Anne's Hosp.—Res. surg. O., at rate of £200.
Argyll and Bute District Mental Hosp.—Asst. M.O., £400.
Bath, Royal United Hosp.—H.S., at rate of £150.
Birmingham, Dudley Road Hosp.—Jun. M.O., at rate of £200.
Brighton, Royal Sussex County Hosp.—Mayo fellowship in anæsthetics, £300.
*British Postgraduate Medical School, Ducane Road, W.*12.—Jun. asst. for dept. of pathology, £300. Also two H.S.'s, each at rate of £105.
Cambridge, Addenbrooke's Hosp.—Res. anæsthetist and emergency officer, at rate of £130.
Canterbury, Kent and Canterbury Hosp.—H.S., at rate of £125.
*Central London Throat, Nose, and Ear Hosp., Gray's Inn Road, W.C.*1.—Hon. assts. in outpatient dept.
Chesterfield and North Derbyshire Royal Hosp.—Hon. cons. surgeon and director of the ear, nose, and throat dept.
Chichester, Royal West Sussex Hosp.—Jun. H.S., £125.
Colonial Medical Service.—Medical Officers.
Cornwall County Council Education Dept.—School medical inspector, £600.
Derby, Bretby Hall Orthopædic Hosp.—Jun. res. asst. M.O., £350.
Devonport, Prince of Wales's Hosp.—Sen. and jun. H.S., at rate of £130 and £120 respectively.
Dudley Guest Hosp.—H.S., £150.
East Sussex County Council.—M.O. and public vaccinator, &c., £190 and fees.
Eastbourne County Borough.—Deputy M.O.H. and deputy school M.O., £600.
Exeter City and County.—Asst. M.O.H., £500.
Guildford, Royal Surrey County Hosp.—Two H.S.'s to spec. depts., each at rate of £150.

*Hampstead General Hosp., Haverstock Hill, N.W.*3.—Cas. M.O. for outpatient dept., at rate of £100.
*Holborn Metropolitan Borough, W.C.*1.—Temp. M.O. for maternity and child welfare centre, £1 11*s.* 6*d.* per session.
*Hosp. for Sick Children, Great Ormond Street, W.C.*1.—Two H.P.'s and two H.S.'s, each at rate of £50. Also hon. associate neurological surgeon.
*Hostel of St. Luke, 14, Fitzroy Square, W.*1.—Res. M.O., at rate of £200.
Hounslow Hosp., Staines Road.—H.P. and cas. O., at rate of £100.
Huddersfield County Borough.—Asst. school M.O., £500.
Hull, Beverley Road Institution.—Asst. M.O., £350.
Ilford, King George Hosp.—Res. surg. O., £250. Also res. anæsthetist, at rate of £150.
Ilkley, Scalebor Park Mental Hosp., Burley-in-Wharfedale.—Med. supt., £1000–£1250.
Ipswich, East Suffolk and Ipswich Hosp.—Cas. O. Also H.S. to ear, nose, and throat dept, &c., each £144.
Ipswich Borough General Hosp.—Med. supt., £900.
Iraq Government.—Ear, nose and throat specialist, Iraq Dinars 150 per mensem.
Isleworth, West Middlesex County Hosp, Twickenham Road.—Cas. M.O., at rate of £350.
Leeds University.—Tutor in obstetrics and gynæcology, £500.
London County Council.—Asst. dist. M.O., £150.
*London Hosp., E.*1.—Surg. first asst. and registrar, £300. Surgical outpatient first asst., £150. Sen. clin. asst. to obstet. and gyn. outpatient dept., at rate of £200. Also res. anæsthetist, £150.
London University.—Chair of pathology of mental disease at Maudsley hosp., £1250. Also readership in biology at St. Bartholomew's Hosp. Medical College, £700.
Manchester, Crumpsall Hosp.—Res. asst. M.O., at rate of £200.
Manchester, Saint Mary's Hosps.—H.S.'s to special depts., each at rate of £50.
Melton and Belvoir Rural District Council, &c.—M.O.H., £800.
*National Temperance Hosp., Hampstead Road, N.W.*1.—Cas. O., at rate of £120.
*Nelson Hosp., Merton, S.W.*20.—Res. H.S., at rate of £150.
Northampton General Hosp.—H.S. to ear, nose, and throat depts., at rate of £150.
Norwich, Norfolk and Norwich Hosp.—Hon. physician.
Nottingham Hosp. for Women.—H.S., at rate of £150.
Oxford County and City Mental Hosp.—First asst. M.O., £500.
Otago University, New Zealand.—Lady King Scholarship, £600.
Oxford University.—First asst. in dept. of anæsthetics, £600.
Peterborough City Education Committee.—Temp. part-time school oculist, 2½ guineas per session.
*Poplar Hosp., East India Dock Road, E.*14.—Hon. radiologist.
*Prince of Wales's General Hosp., N.*15.—Hon. asst. radiologist.
*Princess Beatrice Hosp., Earl's Court, S.W.*5.—Cas. O. and obstet. H.S., at rate of £110.
*Princess Elizabeth of York Hosp. for Children, Shadwell, E.*1.—H.P., at rate of £125.
*Princess Louise Kensington Hosp. for Children, St. Quintin Avenue, W.*10.—H.P. and H.S., each at rate of £120.
*Queen Charlotte's Maternity Hosp., Marylebone Road, N.W.*1.—Res. M.O. for isolation hosp., at rate of £200.
Queen's Hosp. for Children, Hackney Road, E.—H.P., at rate of £100.
Rainhill, Lancs., County Mental Hosp.—Asst. M.O., £550.
Reading Royal Berkshire Hosp.—H.P., at rate of £150.
Richmond Borough, Surrey.—Asst. M.O.H., £600.
Richmond Royal Hosp., Surrey.—Res. M.O., £200.
Rotherham Hosp.—H.P., £180.
Royal Air Force.—Commissions.
*Royal Cancer Hosp., Fulham Road, S.W.*3.—Asst. physician. Radium therapeutist, £650. Asst. radiologist for therapeutic dept. and asst. radiologist to diagnostic dept., each £350. Also surg. reg. and med. reg., each £150.
*Royal Chest Hosp., City Road, E.C.*1.—H.P., at rate of £100.
Royal College of Surgeons of England.—Annual examinerships.
*Royal Northern Hosp., Holloway, N.*7.—H.S., at rate of £70.
*Royal Society of Medicine, 1, Wimpole Street, W.*1.—William Gibson Research Scholarship, £292.
*St. John's Hosp., Lewisham, S.E.*13.—Res. surg. O., £200. Also H.P., at rate of £100.
*St. Mary's Hosp., W.*2.—Surg. Reg.
*St. Peter's Hosp. for Stone, &c., Henrietta Street, Covent Garden, W.C.*2.—H.S., at rate of £75.
Scarborough Hosp.—Two H.S.'s and H.P., each at rate of £150.
Sheffield, Royal Hosp.—Clin. asst., £300.
Smethwick County Borough.—Sen. asst. M.O.H., and asst. school M.O., £650.
Southampton, Royal South Hants and Southampton Hosp.—Res. anæsthetist. Also H.S. to general, surgical, and ear, nose, and throat wards, each at rate of £150.
Stockport Infirmary.—H.S., £150.
Sunderland Royal Infirmary.—Locum res. surg. O., at rate of £25. Also H.S. to fracture and orthopædic dept., £225.
Taunton and Somerset Hosp.—H.P., at rate of £125.
Tilbury Hosp., Essex.—Med. supt., £200. Also H.S., at rate of £140.
Torquay, Torbay Hosp.—Hon. physician. Also H.P. £175.
*University College Hosp. Medical School, W.C.*1.—Asst. in dept. of bacteriology, £250.
Warrington Infirmary and Dispensary.—Third resident, at rate of £150.
*West End Hosp. for Nervous Diseases, 73, Welbeck Street, W.*1.—In-patient registrar, £50.
*West London Hosp., Hammersmith, W.*6.—H.P., H.S., Also res. anæsthetist, each at rate of £100.
Western Australia Government Mental Hosps. Dept.—Senior M.O., £735. Also two jun. M.O.'s, each £666.
*Western Ophthalmic Hosp., Marylebone Road, N.W.*1.—Res. sen. and jun. H.S.'s, at rate of £150 and £100 respectively.
Wigan, Royal Albert Edward Infirmary and Dispensary.—Two H.S.'s, each at rate of £150.
Windsor, King Edward VII Hosp.—H.S., £120.
Wolverhampton, New Cross Hosp.—Res. asst. M.O., £200.
Wrexham and East Denbighshire War Memorial Hosp.—Two res. H.S.'s. Also res. H.S. to special depts., each at rate of £150.
The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Garforth (York, W.R.), and Littleborough (Lancaster).

Appointments

BALCH, H. W., M.B. Aberd., junior assistant medical officer at King Edward VII Memorial Sanatorium, Hertford Hill, nr. Warwick.
BUTLER, E. C. B., M.B. Lond., F.R.C.S., junior surgeon to the Royal Surgical Aid Society.
CRAWFORD, J. W., M.D. Glasg., D.P.H., deputy and assistant medical officer of health for Stepney.
CROSSLEY, DOROTHY L., M.B., woman assistant school medical officer for Middlesbrough.
FRASER, PHYLLIS M. FARNCOMBE, M.B. Lond., D.M.R., hon. radiologist in charge of the X-ray and electrotherapeutical department, Princess Elizabeth of York Hospital for Children, London.
GUNN, A. L., M.D. Wales, F.R.C.S.E., M.R.C.O.G., medical officer to the St. Pancras gynæcological clinic.
KIERNANDER, BASIL, M.R.C.P., D.M.R.E., assistant physician to the department of physical medicine, Radcliffe Infirmary, Oxford.
*KNOWLES, E. W., Ch.M. Lpool, resident assistant medical officer at Crumpsall Hospital, Manchester.
LAWLER, N. A., M.B. Sydney, D.M.R.E., D.M.R., assistant to the radiological department of the Gloucester Royal Infirmary.
MATHEWS, J. G., L.R.C.P.I., surgical registrar at the Jervis Street Hospital, Dublin.
MURRAY, D. P., L.R.C.P.I., surgical registrar at the Jervis Street Hospital, Dublin.
PAPPWORTH, M. H., M.D. Lpool, M.R.C.P., resident assistant medical officer at Cumberland House Hospital, Mitcham.
ROBERTS, R. F., M.D., assistant school medical officer for Kent.
WADGE, JOAN, M.B. Lond., F.R.C.S., registrar at the Royal Ear Hospital, University College Hospital, London.
WILKES, NELLIE, M.B. Birm., M.R.C.O.G., assistant medical officer of health (maternity and child welfare) for Halifax.
WILSON, A. HUTTON, M.D. St. And., assistant hon. physician to the Devonshire Royal Hospital, Buxton.
Royal Sheffield Infirmary and Hospital.—The following appointments are announced :—
PRICE, A. K., M.B. Lond., F.R.C.S., surgical registrar;
JONES, C. D. P., M.B. Lond., resident surgical officer;
NAYLOR, ARTHUR, M.B. Sheff., senior casualty officer; and
ANDERSON, JOHN, M.B., resident anæsthetist.
Examining Surgeons under the Factories Act, 1937: Dr. A. W. CUTHBERT (Cardenden District, Fife); Dr. J. M. HOLMES (Stafford District, Stafford).

* Subject to confirmation.

Births, Marriages and Deaths

BIRTHS

BALFOUR.—On Feb. 23, at West Worthing, the wife of Dr. Ivor Balfour—a son.
CHRISTIE.—On Feb. 26, at Devonshire Place, W.1, the wife of Prof. Ronald V. Christie—a daughter.
MORLEY.—On Feb. 21, at Yeovil, the wife of Dr. John E. Morley—a son.
NEWMAN.—On Feb. 24, the wife of Surgeon Commander G. G. Newman, R.N., of H.M. Dockyard, Portsmouth—a daughter.
PURDY.—On Feb. 22, at Oakham, the wife of Mr. Gordon Purdy, F.R.C.S.E.—a son.
SINGER.—On Feb. 23, at Devonshire Place, W.1, the wife of Major E. O. A. Singer, R.A.M.C.—a son.

DEATHS

BEEVOR.—On Feb. 24, in a nursing-home, Sir Hugh Reeve Beevor, Bart, M.D., F.R.C.P., of Hargham, Norfolk, aged 80.
BOYCE.—On Feb. 27, at Bournemouth, Charles Boyce, M.D. Edin., of Canford Cliffs, Dorset, aged 85.
CLEMOW.—On Feb. 25, at Ealing, Frank Gerard Clemow, C.M.G., M.D. Edin., aged 76.
COOKE.—On Feb. 26, William Henry Cooke, M.D. Brux., F.R.C.S.E., of Bath.
DODDS.—On Feb. 10, at Capetown, Horace Bonar Dodds, M.D. Edin.
HOBSON.—On Feb. 22, at Hastings, Lewis John Hobson, M.D. Lond., F.R.C.S.E., of Harrogate.
MACKENZIE.—On Feb. 24, at Cheadle, Staffs, Ernest Mackenzie, M.D. Glasg., aged 76.
MITCHELL.—On Feb. 25, at Farnborough, Hants, Lieut.-Colonel Lionel Arthur Mitchell, M.B. Dubl., R.A.M.C. (retd.).
MURISON.—On Feb. 27, at Clifton Court, N.W.8, Alexander Murison, M.B. Aberd., formerly of Cairo, Egypt.
SKINNER.—On Feb. 28, in London, Ernest William Skinner, O.B.E., M.D. Edin., Lt.-Col. R.A.M.C., of Rye, Sussex.
STANSFIELD.—On Feb. 19, at 9, av. Fremiet, Paris, Lieut.-Colonel T. E. Knowles Stansfield, C.B.E., M.B. Edin., late R.A.M.C., proprietor of the Castello Devachan, San Remo.
WHITEHEAD.—On Feb. 21, at the East Dulwich Hospital, Charles Ernest Whitehead, M.B. Camb., M.R.C.S.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

DELINQUENCY AND PSYCHOLOGY

In a paper read at a meeting of the Medical Society of Individual Psychology on Feb. 9 Mr. Claude Mullins said that our methods of trial offended the principles of psychology in six ways: (1) by keeping the suspect as long as possible in ignorance of the fact that he was suspected; (2) by telling him, as soon as the matter was mentioned to him, that he need not make any statement, with the obvious innuendo that it might be worse for him if he talked; (3) by accepting as a general principle that contradictory statements were evidence of lying; (4) by ascertaining the facts by means of a sort of sporting contest in which both sides admitted that a wrong decision of "not guilty" did not matter; (5) by holding the proceedings in a court-room constructed so abnormally as to instil fear; and (6) by allowing the public to be present and the press to publish all names and addresses without being compelled to publish a fair account of the case.

Reformer though he was, he would not abandon these principles before psychologists could suggest a better alternative. Psychologists had not yet tackled the problem of procedure in court. If they were to do so, they would doubtless meet with a frigid reception from most lawyers at first, for as a profession lawyers were satisfied almost to the point of smugness. So far psychology had only concerned itself with procedure after sentence. He had often used the help of psychotherapy to remould offenders. Here progress had been made, although there could be no real agreement between Freudian psychologists and practical lawyers, who had to accept free will and punishment and were often surprised at some of the claims made by psychologists. He pleaded for severe moderation in the expression of psychological theories, if they hoped to influence the benches. The time might come when their occupants would be compelled to have a training in psychology. There were five main difficulties: (1) the bench was concerned rather with the protection of society than with what was best for the delinquent; (2) many delinquents were of subnormal intelligence and unamenable to psychotherapy; (3) public opinion was imbued with the spirit of retaliation; (4) many delinquents did not wish to be cured and refused to coöperate with psychologists; and (5) psychotherapy often necessitated very prolonged treatment. In spite of these difficulties Mr. Mullins believed that, though progress would be slow, one day psychology would revolutionise our criminal law and procedures. Progress would probably be more rapid in the juvenile courts, where the value of child guidance was increasingly being realised. Psychological lawyers would replace criminal lawyers, and formal trials would cease to exist, even as hysteria was no longer the subject of a trial for witchcraft.

THE PHYSIOLOGY OF VISION

Most of the gross phenomena of vision were elucidated in the last century, and there is little room in the modern physiological textbook for more than a few elementary observations on the subject. Even the fuller accounts give small indication of the trends of modern research, and this is a pardonable fault, for these have few applications for the average medical student. It is a pity, however, to lose sight entirely of progress even in a specialised field, and those who read the review by Wright and Granit [1] will find both the opportunity and incentive to bring themselves up to date. The contents are too technical to be easily summarised, but they cover recent advances in the photochemistry of substances found in the retina and in the study of the electrical phenomena accompanying vision. The discovery that light sets up an inhibitory state in addition to excitation, so that its removal is followed by impulses in the optic nerve, is particularly interesting, for it must give to visual perception in some respects the adaptability of a reflex action. The electrical response also reveals differences between light- and dark-adapted retinæ which are not apparent in other ways. The more subjective phenomena of vision, such as appreciation of luminosity and colour, visual activity, light- and dark-adaptation and so forth, are also discussed and their possible relationship to physically measured values indicated. In a final more speculative section the authors point out what they regard as the problems of the future.

1. On the Correlation of some Sensory and Physiological Phenomena of Vision. By W. D. Wright, Imperial College of Science, London; and Ragnar Granit, Institute of Physiology, University of Helsingfors. *Brit. J. Ophthal.* 1938, Monograph suppl. IX.

TULARÆMIA IN THE UNITED STATES

According to Dr. Byron J. Olson (*Bull. Off. int. Hyg. publ.* 1938, **30**, 2808) the total number of cases of human tularæmia in the United States from 1920, when the disease was first described in man, to 1937 was 8037, with 360 deaths—a fatality-rate of about 5 per cent. The disease has been found in all the states except Vermont and Connecticut. The principal sources of infection are the wild rabbit and the wild hare, which are the direct cause in more than 90 per cent. Other sources are the wood-tick, dog-tick, horse-fly, opossum, quail, sheep, musk-rat, marmot, cat, red fox, squirrel, grouse, coyote, stag, wild boar, bull-snake and skunk. The seasonal incidence of the disease is due to changes in the opportunities for infection. There has so far been no evidence of the transfer of the disease from man to man.

A PSYCHOLOGICAL VIEW OF EDUCATION

The headmistresses of the twenty-five schools controlled by the Girls' Public Day Schools Trust, finding that they had not sufficient time to master modern theories of education and psychology, suggested a few years ago that the council of the trust should engage an experienced woman psychologist to visit each school and study the problems she encountered from her specialised standpoint. Her duty would be to observe the sequence of work at different stages, paying particular attention to difficult classes, variation of methods, the effect of physical conditions such as ventilation and lighting, the length of lesson periods and the arrangement of the time-table; and to conduct vocational tests, lecture to the staff and parents on child psychology, and advise individual members of the staff on their own mental health. Her function would be, in fact, to infiltrate each school with modern psychological ideas and practice and to carry out research. A modified plan was drawn up and work began in January, 1935. The results have now been published [1] as one of the series "Contributions to Modern Education," edited by Mrs. Susan Isaacs, D.Sc. The practical implications include establishing contacts between school and parent, helping girls to deal with their emotional problems, allowing for individual differences in ability, using intelligence tests in the entrance examinations, assisting discipline, reducing fatigue for the staff and promoting educational and vocational guidance. This study is merely a scratch on the surface of an immense field and brings together only the bare outlines of its problems. These outlines, however, will be of great value to all teachers of girls, and will inevitably stimulate interest in, and suggest an approach to, the problems of everyday work in school.

1. The Human Problem in Schools. By Marion Milner, B.Sc. London: Methuen and Co. 1938. Pp. 320. 8*s*. 6*d*.

OSTEOMALACIA WITH CŒLIAC DISEASE

AT a meeting of the Devon and Exeter Medico-Chirurgical Society on Feb. 23 Dr. C. J. Fuller showed and described a case of osteomalacia.

The patient, a girl of 11, had been treated 4½ years ago at Alton Sanatorium, but had afterwards been discharged to a poor home. There was a history of recent muscular spasms and diarrhœa, and the right ankle was swollen for a week before her admission to the Royal Devon and Exeter Hospital. When first seen by Dr. Fuller she was much under-nourished, weighing only 1 st. 12 lb. and she appeared to be only about 5 years old. The abdomen was large and tumid. Radiograms revealed bony changes typical of osteomalacia and also fractures of the left wrist and ankle. A blood-count showed severe microcytic anæmia and the serum-calcium was only 7·8 mg. per 100 c.cm. The stools showed no excess of fat, probably because she had been inadequately fed at home, and the Wassermann reaction was negative.

The essential disorder in this case, said Dr. Fuller, was inability to absorb calcium. Treatment with a diet rich in vitamin but poor in fat had much improved the girl's condition, though she was still small for her age.

THE "BIOMOTOR"

Messrs. Richard Ostermann Ltd. (High Holborn, W.C.1) have called our attention to a remark, made by Sir Henry Gauvain at a recent meeting of the Medical Society of London (see *Lancet*, Jan. 28, p. 212), to the effect that the Biomotor exerts negative pressure. Actually, we are told, the apparatus is designed for the application of both negative and positive pressure, and it is this double action which is the basis of the claim made for efficiency as an agent of artificial respiration. The biomotor is one of the "breathing machines" mentioned by Prof. L. J. Witts in an address to the Manchester Medical Society briefly reported on p. 453 of our last issue. Dr. Rudolf Eisenmenger in a monograph issued five years ago (Munich: F. and M. Lautenschläger) suggests uses for the apparatus in respiratory and circulatory disorders as well as in a host of other disorders such as constipation, obesity, and cirrhosis of the liver. The apparatus weighs about 65 lb. or 95 lb. with its trolley; its lightness and portability facilitate its application in emergency.

TRANSDENTAL DISLOCATION OF THE ATLAS

FRACTURE of the dens of the axis with dislocation of the atlas is an accident which rarely comes into the doctor's hands for treatment, because it usually leads to instant death. In a case reported by G. W. Tromp, however, the patient not only survived but remained free from any symptoms of damage to the spinal cord (*Med. Tijdschr. Geneesk.* 1939, **83**, 586).

A woman of 23 was injured in a motor accident, striking her forehead forcibly against the side of the car. She was taken to a neighbouring clinic in another car and the doctor there found that though she was holding her head inclined sideways and forward it could be moved actively in all directions except backward. No nervous signs or symptoms were present. A radiogram was taken, but the fracture of the dens was not noticed, and there was at that time no sign of displacement. Subsequent examination of the plate, however, clearly showed the presence of the fracture. The doctor, diagnosing a subluxation of the cervical spine, anæsthetised the patient, pulled on the head forcibly and put the neck only in plaster. After this manipulation the patient could not move her head in any direction, and complained of severe pain in the neck and back of the head and tingling in the left thumb, index, and middle fingers. Another radiogram taken after she had come under Tromp's care showed the fracture of the dens with backward displacement of the fragment and of the whole of the atlas to a distance equal to half the breadth of the dens.

To prevent further displacement and sudden death the head and neck were immediately fixed in a plaster case including the thorax, no attempt at reduction being made. But the necessary handling produced further displacement, a radiogram showing that the fragment and the atlas were now displaced backwards a distance equal to the whole breadth of the dens, and it was decided in spite of the danger to attempt replacement. The plaster case was cut away from the head only, so that traction-bands could be passed beneath the occiput and chin, and steady traction then reduced the dislocation, as was proved by another radiogram. The traction was maintained for 20 minutes, and the head was meanwhile re-encased in plaster of paris. The patient was kept recumbent in the plaster case for 4 weeks, when fresh plaster was applied. After 2 months the patient was allowed up in a surgical jacket with head-extension.

She continued to make good progress, and at the time of publication, 7½ months after the accident, appears to be quite well.

STATISTICAL BIBLIOGRAPHY

THE Rutgers University Press have published a reprint[1] from their "Mental Measurements Yearbook for 1938" which aims at providing a full list of the recent books in English dealing with statistical methods and with methods of research, mainly in the social sciences. To help the seeker after truth to assess the value of each book the editor has included extracts from the reviews it received in the scientific journals—a process he describes as "excerpting evaluative statements." He proposes to supplement the list every year if it proves of value, and invites comment. In response to that invitation it may be suggested that the "full bibliographic information" given should include English authors under the names that appear on their title pages. It is a little strange, for instance, that the world-familiar name of G. Udny Yule should be converted into George U. Yule. The initials of authors and the titles of their publications are not impeccable, so that the list must be used with care.

THE MARMITE FOOD EXTRACT CO. have issued a new booklet with full references to much recent work confirming the value of their product as a source of the vitamin-B complex and as an anti-anæmic agent. Attention is drawn to a tribute to the value of marmite in the treatment of beriberi and of multiple dietetic deficiencies among refugees in China, and to its inclusion among the selected foodstuffs given with good results to groups of necessitous expectant mothers in the depressed areas in this country. The hæmopoietic activity of marmite was originally ascribed to a high content of extrinsic factor, but recent experiments have suggested the presence of another hæmopoietic factor in this substance, which is now established as a curative agent in certain types of macrocytic anæmia.

1. Research and Statistical Methodology. Books and Reviews, 1933–38. Edited by Oscar Krisen Buros. New Brunswick: Rutgers University Press. 1938. Pp. 100. $1.25.

MAYO FELLOWSHIP IN ANÆSTHETICS.—Particulars of this fellowship, which has been founded by a Sussex resident and is tenable at the Royal Sussex County Hospital, Brighton, will be found in our advertisement columns. The new fellow will be in charge of the anæsthetic department of the hospital under the hon. anæsthetists, but he will also be expected to undertake research, for which special facilities will be given him in the hospital and in the Stephen Ralli laboratory. Nearly 10,000 anæsthetics have been given in the operating-theatres of the hospital in the past three years; there are three hon. anæsthetists and two assistants.